COSUMNES POWER PLANT (01-AFC-19)

DATA RESPONSE, SET 1C

(Responses to Data Requests: 7, 12, 16, 17, 18, 32, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 56, 58, 60, 61, 62, 64, 65, 86, 87, 88, 95, 96, 107, 108, 110, 118, 119, 121, 122, 136, 138, 150, 151, 153, 156, and 157)

Submitted by

SACRAMENTO MUNICIPAL UTILITY DISTRICT (SMUD)

February 4, 2002

2485 Natomas Park Drive, Suite 600
Sacramento, California 95833-2937

Technical Area: Biological Resources
CEC Authors: Melinda Dorin and Rick York
CPP Author: EJ Koford

BACKGROUND

In AFC Section 8.2, Biology and 8.14, Water Resources, Clay Creek and the tributaries to Clay Creek are briefly described. The sections state that Clay Creek via Laguna Creek is a tributary to the Cosumnes River, and that the Cosumnes River contains anadramous fish species. In addition, Appendix 8.2B of the AFC contains a letter from NMFS that contains LORS information and a summary of conservation measures, yet the Magnuson-Stevens Act is not listed in Table 8.2-1, no fish species are listed in Table 8.2-4, nor is the National Marine Fisheries Service (NMFS) listed as a contact in Table 8.2-5.

DATA REQUEST

7. Please provide more detail (e.g., habitat types, spawning areas, jurisdictional wetland areas) about the biological resources and fish species found in Clay Creek and discuss the likelihood of anadramous fishes using that stream channel as habitat.

   Response: As described in the AFC, Clay Creek is seasonal upstream of the Rancho Seco discharge. Winter rainfall and runoff fill the stream during winter months, but it generally dries during summer. Workers report that they occasionally spill water into the creek from Rancho Seco Reservoir, but this is an irregular and unmonitored event.

   Clay Creek from Clay East Road to the confluence with Hadselville Creek was surveyed on January 18, 2002 by EJ Koford and Mark Tompkins of CH2M HILL.

   The aquatic habitat of the mainstem of Clay Creek is characterized by clean cobble substrate and sparse algae vegetation. The banks are incised to a depth from 3 to 6 feet near the east end, gradually becoming deeper to the west. There are approximately 4 swales and tributaries that join the mainstem between the proposed project area and Rancho Seco Plant (RSP). Upstream of the project site tributaries to Clay Creek flow from Rancho Seco Reservoir and from swales located south of the project. The entire watershed is approximately 2 miles in diameter. Historical records indicated that Rancho Seco Park once had a sewage waste pond, but SMUD staff report that discharge has been discontinued, and no longer contributes to Clay Creek. Some of these swales end abruptly at their upstream ends, indicating they may have been formed by historical excavations. These swales are shown in Figure 8.14-5 of the AFC. The southerly of the swales, which crosses the northeast corner of the proposed project area, go around the south end of a dam associated with the mine tailings east of the site. At the mine tailings it

ends in isolated ponds choked with dense vegetation and surrounded by willow and oak trees. Isolated pools and the mainstem of Clay Creek were clear enough to see and identify bass, sunfish, bullfrog and what appeared to be a threadfin shad. Fish were sparse and located primarily in isolated deep pools. The mine ponds appear to support lots of bullfrogs and appear suitable for bass and sunfish.

Clay Creek accumulates the four tributaries and passes through a concrete box culvert under the access road that crosses through the proposed project site. SMUD staff report that two large pond turtles have been seen in this area. Approximately 50 feet downstream of the bridge, the RSP discharge enters the mainstem of Clay Creek in a narrow straight channel. The bottom of the channel is cobble and fine gravel, the banks armored by dense tufts of rushes (*Scirpus sp.*).

Approximately 0.5 mile west of RSP the land use abruptly changes from pasture to vineyards. The creek makes an abrupt turn north to fill a farm pond (approximately 1 acre) that is evidently used to irrigate the grapes. There is a large diversion pump and pipe here, evidently also serving the vineyard. The pattern of one main incised channel, with cobble substrate and dense rush cover on both banks continues downstream to Hadselville Creek, with the channel becoming gradually wider and the depth remaining between 2 and 4 feet. There is a second diversion pump at the confluence of Clay Creek with Hadselville Creek, approximately 0.5 mile north of Twin Cities Road. At Hadselville Creek, the river is dammed by flashboards and flows slowly. The substrate is silt and mud, with grassy bankside vegetation. The area is grazed, which may account for the relative lack of vegetation. A school of approximately 40 fish (probably Sacramento sucker), and 10 bass were observed in this slow water. There are no other diversions on this segment of the creek.

Discharges to Clay Creek from Rancho Seco Reservoir to Hadselville Creek consist primarily of overland flow from rainfall, and limited tailwater from irrigation. One discharge pipe was observed directly south of RSP, which was identified by SMUD staff as a bypass for the Folsom South Canal supply pumps. It did not appear to have been active in a long time.

The mainstem of Clay Creek is shown as a “blue line” on USGS maps, generally indicating it is “waters of the U.S.” A wetland delineation of the area described the “seasonal swales”, which may be jurisdictional wetlands based on soils, hydrology and wetland vegetation.

With respect to spawning areas, bass and sunfish spawn in lakes or slow-moving waters with shallow sandy bottoms. The mine tailing’s ponds and Rancho Seco Reservoir may provide spawning habitat for these species.

Downstream of the flashboards and a broad concrete apron in Hadselville Creek, the stream is narrow and swift through vegetated banks.

BACKGROUND

In AFC Section 8.14.4.1, page 8.14-17 and Appendix 8.14A, the discharge of the circulating water system blowdown into Clay Creek is described. It also states that water quality will meet the requirements of the NPDES permit that will be issued.

DATA REQUEST

12. Provide a map showing the location of the proposed outfall, and describe the habitat within the immediate area of the outfall. Identify other discharges into Clay Creek for the entire section upstream of the project site to the conjunction of Clay Creek with Hadselville Creek downstream of the site.

    Response: The location for the proposed outfall is approximately 100 feet upstream of the existing RSP discharge, and was provided in Figure 8.14-4R as Data Adequacy Supplement. The habitat at the location of the proposed discharge is an incised channel, of a seasonal (winter) stream. the banks are short annual grassland. Because there is no year-round water, aquatic and riparian vegetation consists largely of annual herbaceous species in isolated pockets of the channel, and close to the channel, grading to upland grasslands at higher elevations. The location of other discharges and withdrawals is described in response to Data Request #7, above.

BACKGROUND

A proposed table of contents of the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) is supplied in Appendix 8.2D. In the proposed outline Section 4.4, Wetland Protections, there are subsections that do not correspond to that heading, i.e. Sections 4.4.6 through 4.4.8.

DATA REQUEST

16. Please provide a draft BRMIMP with the following additional sections and include any information in the sections such as impact avoidance measures and proposed mitigation where appropriate.

    - Regional Setting describing all habitats that may be impacted;
    - Biological Resources to be impacted (by species);
    - Construction schedule;
    - Under the existing heading for Mitigation Measures for Sensitive Biological Resources, include subsections that address the proposed species specific mitigation and avoidance measures, for species such as (but not limited to) Swainson's hawks, Western burrowing owls, and anadramous fish species.
    - Habitat compensation measures to mitigate for habitat loss;

- Move the Habitat Revegetation Plan (4.4.8) to a separate section;
- Add a section for pre-construction and post-construction aerial photos of the project area at a 1" to 100' scale; and
- Agency agreements and permits.

Response: The Draft BRMIMP is in preparation and is taking longer than originally anticipated. It should be ready by February 28, 2002.

BACKGROUND

Appendix 8G of the AFC contains the CNDDB printouts dated 6/18/2001 with the locations of sensitive species near the site.

DATA REQUEST

17. Provide copies of the CNDDB forms that were filled out during biological surveys conducted in 2000 and 2001.

    Response: CNDDB for forms completed during biological surveys are included in the biological survey report from Ellyn Davis and Associates (see Attachment BR-17).

BACKGROUND

There are three drainages in the project site that the applicant proposes to reroute. There also may be impacts to Clay Creek, vernal pools along the transmission line corridor (AFC Section 8.2.5), and wetlands along the proposed natural gas pipeline route (AFC Table 8.14-8). AFC Section 8.2.3.2 states that wetland delineations of the project area were completed in April 2000. Wetland areas were depicted in AFC Figures 8.2-1 and 8.2-1R very generally and on a regional scale. USFWS guidance on vernal pools states that indirect and direct impacts are likely to occur when any project is within 250 feet of a vernal pool. Staff does not have enough information to make a final determination on whether direct or indirect impacts may occur to the vernal pools during the construction and maintenance of the transmission towers, gas pipeline, project site, construction laydown area, and water pipeline.

DATA REQUESTS

18. Please provide the wetland delineation surveys that were completed of the site, the construction laydown area, and along all the linear facilities. Include a figure with the delineation points mapped, the wetland delineation data sheets that were completed, a timeline for when the wetland delineation will be submitted to the Army Corps of Engineers for jurisdictional wetland classification, and a discussion of when they expect to initiate consultation with the USFWS.

Response: As discussed at the Data Response Workshop held on January 24th, the wetlands along the gas line are being delineated. A map will be provided as soon as possible. A copy of the Wetland Delineation prepared for the project site is provided as Attachment BR-18.

Attachment BR-18

Wetland Delineation Report

Technical Area: Cultural Resources
CEC Author: Judy McKeehan
CPP Author: Jim Bard and Jim Sharpe

BACKGROUND

The AFC does not provide adequate information on built environment features or facilities that may be more than 45 years old. Additional information is needed to complete the staff analysis.

DATA REQUEST

32. Please identify all structures, facilities and features that are more than 45 years old or appear to be exceptional and are located within 100 feet of the proposed centerline of the gas line. These could include bridges, canals, railroads, roads, and transmission lines. If any of these structures/facilities are more than 45 years old, please have an architectural historian or a historian with a specialty in industrial, architectural or public history complete a Department of Parks and Recreation (DPR) 523A form. If it appears that any cultural resources may be significant, evaluate them for eligibility for the California Register of Historical Resources (CRHR) using additional appropriate DPR 523 forms.

    Response: A supplemental response based on conversations at the January 23, 2002 workshop is provided as Attachment CR-32.

BACKGROUND

It cannot be determined from the AFC and Data Adequacy Responses whether local historical societies and local jurisdictions (cities and counties) were contacted to determine if any historical resources in or near the project area are listed in local historical inventories or registers. Such local inventories are often not reflected in information obtained from a record search at the appropriate Archaeological Information Center. Historical resources listed on county or city inventories may be eligible for the CRHR, even if they have not been formally evaluated. Staff needs this information to complete its analysis.

DATA REQUEST

34. If local historical societies and archaeological societies were not contacted, please contact them and provide copies of any inquiries and responses from such societies. If contact is made through interviews rather than by letter, please provide a written description of contact methods used, information obtained, and the names and contact information for those interviewed.

    Response: At the January 23, 2002 workshop, it was requested that information about possible burial sites provided by Billie Blue Elliston be forwarded to the CEC. Billie Blue Elliston did not provide the location of any

specific burial sites. She was merely concerned about the possibility and recommended that we include tribal representatives in the early stages of the project.

In addition, Mr. James Bard contacted Mr. Larry Weigel of the Sacramento Archeological Society. He was aware of the same sites that had previously been identified and provided no new information.

BACKGROUND

Confidential Appendix 8.3 C-2 discusses a record search summary for the Cosumnes Power Plant Project that was conducted through the California Historical Resources Information System (CHRIS). It does not specify which regional Archaeological Information Center(s) were consulted.

The confidential Appendix 8.3C does not include a complete list of technical reports for the resources identified for the Proposed Gas Line Alignment in Appendix 8.3 C-2.

DATA REQUEST

35. Please submit all cultural resources survey reports that provide the methods and results of all surveys conducted for this project. The methods section should indicate the width of each linear survey area. If the survey coverage was less than 100 feet for historic features and less than 200 feet for archaeological features on each side of the centerline of the linear alignments, additional surveys should be completed to attain this coverage.

    Response: At the January 23, 2002 workshop, a copy of the EBASCO 92 report was requested. This report has been requested from CHRIS and will be provided to the CEC upon receipt.

36. For the surveys conducted specifically for the Cosumnes Power Plant Project, rather than the surveys conducted for other projects, the report appendices should contain resumes of investigators and a letter from the information center where the records search was performed stating they performed the search or that an in-person search was conducted by the applicant's consultant.

    Response: At the January 23, 2002 workshop it was noted that a letter from the information center had not been provided. The initial record search for the proposed gas line and the alternate routes was performed by Garcia and Associates (GANDA). The letter from the information center for the CPP project site is contained in Appendix A of Confidential Appendix 8.3C-1. We do not have a copy of the letter from the information center for the linear routes, but GANDA stated that it performed that search (see Confidential Appendix 8.3C-2). Both of the confidential appendices were filed with the AFC.

37. Provide copies of all DPR 523 site record forms for cultural resources in or within ¼-mile of the project and all linear alignments required for the project.

Response: At the January 23, 2002 workshop, a list of DPR 523 reports was requested. It should be noted that the DPR 523 for Arno School was provided with the 523 forms from JRP Historical Consultants in Attachment CR-37, Data Response Set 1A. The buildings at 9853 Franklin Boulevard were not surveyed because it is located on the east side of Franklin Boulevard and in this area the pipeline is located on the west side of the railroad tracks. Therefore, this building is more than 1000 feet from the pipeline. The 523 reports for the other locations have been requested and will be provided when received.

38. Provide the dimensions of the proposed Area of Potential Effects (APE) for the project site and linears.

Response: At the January 23, 2002 workshop, additional information was requested about impacts to the vicinity of the plant site. The current plant footprint is 1041 feet by 1123 feet, equaling 26.8 acres. Including the detention pond and berms that reroute the ephemeral streams, the project will likely disturb about 35 acres.

The Phase I laydown area will be about 450 feet x 675 feet, equaling 7 acres. The Phase II laydown will use about twice that area (15 acres), since the District will use the Phase II area for construction laydown during construction of Phase I, but can't use that portion of the plant site for laydown during construction of Phase II.

The water supply and discharge piping will disturb about 65 feet x 3000 feet, equaling about 4.5 acres. The transmission towers will add another half acre or so. Therefore, the total area disturbed by the project in the vicinity of the site is about 55 acres.

39. Please provide a plan to avoid (the plan should include, but not be limited to CA-SAC-93) all identified archaeological sites (both prehistoric and historic) within 200 feet and historic sites (built environment) within 100 feet of the plant site, linear routes, laydown, parking areas, and access roads. If it appears that a cultural resource cannot be avoided, provide a test plan for each archaeological resource and complete and provide the evaluation forms DPR 523, as appropriate, for historic resources, pursuant to CEQA Section 15064.5, (a), (3), (A)(B)(C) & (D).

Response: We had hoped to have this plan available by February 4th. However, we are awaiting information that is being prepared by the pipeline design contractor and we will need to incorporate data discovered during the January 26, 2002 field visit. Therefore, we should have this plan available by February 28, 2002.

40. On maps 1-6 of Confidential Appendix 8.3D, please identify what areas of the proposed gas line were covered in each report. AFC page 8.3-21 discusses several sections on the route that were almost completely surveyed. Please also add the locations of areas that were not completely surveyed.

    Response: The areas covered by the various studies done by others are indicated on the revised maps in Appendix 8.3DR, which is being filed under a request for confidentiality.

BACKGROUND

AFC Sections 2.2.15, 8.2.4, and figure 2.2.3-3 refer to a potential parking and laydown area south of Clay Road and the project site. No cultural resource survey information is provided for this area.

It is possible that temporary staging and laydown areas and workforce parking for the gas pipeline construction could be placed in areas leased or rented from property owners adjacent to the pipeline easement. Staff needs additional information to determine whether there is the potential for impacts to cultural resources.

DATA REQUEST

41. Please survey and provide survey information for the parking and laydown area south of Clay Road and the project site.

    Response: These areas were surveyed on January 23-25. It will take longer to prepare these reports. The reports should be ready by February 15, 2002.

42. Identify the location of any areas that will be used as pipe or equipment staging and laydown areas or for parking, water supply, fire protection waterline, or other purposes. Please provide the results of a cultural resources survey for these areas.

    Response: Equipment staging and laydown areas for the gas pipeline will occur within the 75-foot-wide construction corridor with the exception of the gas line emergency shut-off valves. The areas where the shut-off valves will be located and the proposed construction laydown area for the plant site was surveyed January 23-25, 2002. The reports should be ready by February 15, 2002.

43. If cultural resources are present, please provide completed DPR 523 forms for the resource(s).

    Response: The DPR 523 form for site SAC-93-ALT will be re-recorded / updated and a copy will be provided by March 15, 2002, since further analysis will be done to define that site boundary.

BACKGROUND

The AFC, Section 2.4.3 states that a new gas line parallel to the existing SMUD gas line would be required for operation of the second phase of the project. AFC Sections 1.2, and 2.1 indicate that construction of Phase II is within the current schedule. Staff needs additional information about cultural resources that could be impacted by construction of this pipeline. It appears from information provided in the AFC p. 2-25 that the gas line for phase II is part of this project.

DATA REQUEST

44. Please provide the results of a records search that extends ½-mile from the centerline of the proposed gas line for Phase II.

45. Please conduct an archaeological pedestrian survey that extends to a minimum of 200 feet on both sides of the proposed center line of the gas line and provide the results. Complete DPR forms 523A for identified resources.

46. Please conduct an historic resources survey that extends to a minimum of 100 feet on both sides of the center line and provide the results. The survey should be conducted by someone who meets the Secretary of the Interior Standards in history or architectural history. Record cultural resources that appear to be 45 years or older on a DPR 523A form and complete additional DPR 523 forms as appropriate for evaluation.

47. Describe avoidance procedures for any cultural resources that are identified.

48. If it is not possible to avoid the cultural resource(s), please provide an evaluation of the eligibility of the site(s) for the California Register of Historical Resources pursuant to (CEQA Section 15064.5, (a), (3), (A), (B), (C), and (D).

Response to Data Requests 44 to 48: As noted in the prior response (Set 1A), gas compressors will be added to the pipeline to provide sufficient gas pressure for Phase II. The location of the gas compressors was surveyed on January 24-25, 2002. The results of that survey will be included in an AFC Supplement that should be filed in February 2002. As discussed at the workshop, there are no impacts to the built environment from these compressor stations. The one near Carson Ice Gen is located with the expansive Sacramento Regional Wastewater Treatment Plant's buffer lands. The one at Winters, as confirmed by Jim Sharpe, is surrounded by orchards. The nearest structure is about ½ mile away.

BACKGROUND

AFC Section 8.3.5 proposes that construction monitoring take place in areas of proximity to the cultural resources listed on Table 8.3-4 and in areas of high probability for cultural resources. It is not possible to determine from the present information which

areas are to be considered of "high probability", additional information is needed to complete the staff analysis.

DATA REQUEST

49. Please identify the location of areas considered "high probability areas" on maps 1-6 (Confidential Appendix 8.3D).

    Response: The location of the high probability areas is shown on the revised Appendix 8.3DR, which is being filed under a request for confidentiality.

BACKGROUND

The discussion of cumulative impacts in the AFC does not provide any information on other projects in the area that could impact cultural resources. The discussion of cumulative impacts should consider such other projects. Additional information is needed to complete the staff analysis.

DATA REQUEST

50. Please provide a discussion of other projects (in permitting or currently under construction) within a one-mile radius of the Cosumnes Power Plant project.

    Response: This is similar to Data Request #56. The County has been contacted and is compiling a list of projects along the linear route that would occur in 18 months. When that list is available, it will be provided to the CEC and this Data Request will be addressed.

51. Please provide a discussion of the cumulative impacts relevant to the information from the previous question.

    Response: See response to Data Request #50.

BACKGROUND

It appears from the content of the letters sent to the Native Americans on the Native American Heritage Commission (NAHC) contact list that the linear routes were not described. It is necessary to inform Native Americans regarding the entire project and linears.

DATA REQUEST

52. Please send an additional letter to members of the Native American Community listed by the NAHC for Sacramento County. In that letter, identify the location of all project linears and provide a map(s) that indicates the project location and location of the linears.

    Response: At the January 23, 2002 workshop, CEC staff indicated concern that the Native American community had not received notice of the gas line route. Copies of letters and the gas line route are provided in Attachment CR-52.

53. Provide copies of the letters to and responses from Native Americans.

Response: At the January 23, 2002 workshop, the CEC indicated that it would like copies of meeting minutes with the Miwok representatives. Minutes of prior meetings are included as Attachment CR-53.

Attachment CR-32

Report from JRP Historical Consultants

Attachment CR-52

Letters Sent to Native American Community Regarding the Gas Line

Attachment CR-53

Minutes from Meetings with Miwok Representatives

MEETING SUMMARY CH2MHILL

Initial Meeting with Miwok Tribe Representatives

ATTENDEES: Kevin Hudson, Glen Villa, Sr., Glen Villa, Jr., Dwight Dutchky, Jim Bard (via telephone)

FROM: John L. Carrier, JD

DATE: November 9, 2001 (updated January 31, 2002)

On Thursday, November 8, 2001, we met with the above representatives of the Ione Band of the Miwok Tribe at the community center in Herald, CA. The purpose of the meeting was to provide an overview of the project and share with the tribal representatives what information we had as well as obtain information in their possession regarding sensative sites. We attempted to tie Jim Bard in via conference call, but the cell phone reception was so poor that after a few attempts Jim was only able to speak for a few minutes.

The tribal representatives share some information about the history of the area and that it was purchased from the Indians by a Spanish land grant in 1844.

They also expressed concerns about the areas near the Consumnes River and Hicksville Cemetery.

As a result of the meeting:

- Glen Villa, Jr. asked me to provide him with a copy of the Cultural Resource Section of the AFC. [Note this was done on November 16, 2001.]
- They requested that we also attempt to contact people in Wilton, CA which they said were from a formerly recognized tribe. [Randy Yonemura indicated at a later meeting (January 15, 2002) that those were his family relatives in Wilton and that he would keep them informed.]
- They requested the opportunity to walk the sensitive areas of the alignment this winter as soon as it became more defined. [On December 1, 2001 a meeting was held to walk the sensitive areas but it was raining so hard that walking the alignment was postponed. Again on January 26, 2002, the group meet at the Hicksville Cemetery. Despite some rain and wind sensitive area were walked. Notes on the December 1, 2001, meeting were prepared. Notes on the January 26, 2002 visit have not yet been received.]

December 3, 2001
Version Dec 6, 2001, 2:00 PM

MINUTES AND ACTION ITEMS:
SMUD Field Meeting, Cosumnes Power Plant

Jokingly billed as the "Rain or Shine" meeting, the humor faded when it turned out to be the former and not the latter. In the field, temperatures were in the 40 degree F range, the wind gusted to 35-40 MPH and rain fell most of the day yielding driving rain conditions and wet, muddy soils. Despite the conditions, the following met in the parking lot at the south edge of the Hicksville Cemetery along Arno Road:

Scott Clapp, Blue Flame Engr. (SMUD) [scottclapp@msn.com]
Jim Sharpe, CH2MHill, Inc. [jjsharpe@mail.bhi-erc.com]
Glen Villa Sr., Ione Band of Indians Tribal Representative [gvilla@cdepot.net]
Glen Villa, Jr., Ione Band of Indians Tribal Representative [gvilla@arb.ca.gov]
Randy Yonemura, Interested Local Party [4305 39th Avenue, Sacramento, Ca. 95828]
Joseph M. Nixon, Earth Tech, Inc. [joseph_Nixon@earthtech.com]

Because of the blowing rain, we met inside Scott's Suburban. He discussed the proposed pipeline route, the trenching operation, the pipe size, and the mechanics of directional boring. We then discussed the archaeological findings, seeking Tribal input on cultural issues. The areas of most concern were the Hicksville Cemetery itself and the Cosumnes River/Badger Creek region.

Following this discussion, in two vehicles we drove the route from the cemetery to the Rancho Seco Plant. The impression was that the Villas were comfortable with that segment of the line. Randy indicated he has concerns and wants to review his historical information.

1. HICKSVILLE CEMETERY

At the time of the field visit, Hicksville Cemetery was fenced with cyclone fencing. Portions of the fencing appeared to be relatively new suggesting that the existing boundaries may not reflect the original boundaries. In addition, very new fencing present at the southeast corner of the cemetery delineates the new fencing put into place when the boundaries of the cemetery were expanded (see below). Using the rough scale on the USGS reprints, the boundaries of the cemetery are indicated to be approximately 500 ft N-S by 250 ft E-W.

Agricultural fields stretch to the west, north and east of the cemetery. County owned Arno Road is situated to the south side of the plot. A fence on the south perimeter of the cemetery appears to mark the change in property ownership from County (road easement) to private (cemetery). In good condition at the time of this visit, Arno Road appears to be well maintained as an asphalt two lane feature. Looking at the road and the surrounding rural landscape leaves the impression that at one time Arno Road was a rural one lane road serving early agricultural access needs. It is easy to imagine that

at several points in the past the road was upgraded leading ultimately to its final (current) condition. For this evolution of the road to occur, additional easement width would have had to be added for expansion. Because the modern road maintains a straight line, it is concluded that the expansion for modernization occurred outward and equally in both directions from a centerline.

It is probable that the early Arno Road passed by the early Hicksville Cemetery. The proximity of the original easement width to the original cemetery, however, cannot be determined in the field and so the southern extent of the cemetery relative to the current easement is not clear. It is possible that modern road construction impinged on southern portions of the cemetery and that burials may extend near or to the edge of the current road.

To facilitate drainage from the road in its current condition, ditches have been cut on either side (north and south) of the road oriented parallel to it. Looking east from the parking lot just outside the southern cemetery fence, these ditch cuts appear to have been at least two to three feet deep. Covered in deep, thick grass at the time of this visit, it was not possible to see the ground surface to inspect for possible evidence of features in the soils.

At the front (south) side of the cemetery is a hand painted wooden sign that reads “Hicksville Cemetery” with an accompanying phone number. Jim Sharpe reported that calling the number resulted in connection with someone who had no knowledge of the cemetery, removing the possibility that this might afford a useful link to further information.

Inside the fence marking the current boundary of the cemetery, toward its north end are upright markers of earlier graves scattered among mature trees that probably date to the origin of the plot. Near the southern (Arno Road) end there are some additional markers that are flat with the ground surface. Flower (plastic) arrangements mark several of these. It is safe to assume that additional flower clusters mark additional graves also flush with the ground surface and not visible from outside of the gate. Earlier graves are near the center of the cemetery with later burials expanding outward. The density and locations of burials within the cemetery are not accurately known.

At some point, Native Americans working on nearby ranches buried some of their ancestors in the cemetery as well. Randy Y. informed us that he had ancestors buried there. The specific locations of these burials as well as their number are not known. Nor is it understood whether the Native American burials are mixed among other interments or if they are grouped separately. It is possible that they are beyond the cemetery as currently marked. To address this issue and hopefully to protect burials on the periphery of the existing cemetery, the boundaries of the cemetery have been extended approximately 25 feet to the west, north, and east. It was not extended to the south because of the easement of County owned Arno Road. During installation of the fence, burials were encountered on the north and east sides of the cemetery reinforcing the conclusion that additional burials might still exist on the south side of the cemetery fence beneath a gravel parking lot area. There was concern that if the pipeline is

planned to go through this area, burials may be encountered. Construction options discussed included subsurface non-invasive archaeological investigations of the area, directional boring beneath potential burials or relocating the line away from potential burials.

Glen and Randy knew of a company that might be able to identify potential grave sites as well as assist in any archeological work necessary for the project. The company is Tremaine & Associates from the Dixon area. Tremaine and Associates are developing a device that can locate graves using electromagnetic fields. The device was successfully used recently at the Stone Lakes sites. Randy and Glen said that Tremaine and Associates is currently looking for test areas and might be willing to use their device to identify graves free of charge to further product development.

CONSTRUCTION OPTIONS:

1. Non-invasive subsurface archaeological investigations. The purpose of this approach would be to identify specific locations where there are burials and in particular, to determine whether potential burials are located just beyond the modern cemetery fence on the south side of the plot beneath the small gravel parking lot. The drawbacks of this approach are that Tremaine and Associates have to be contacted, they have to agree to do the work, SMUD has to agree to the extra charges and allow them to use the resulting data for product development, the equipment and supporting logistical arrangements need to be made, property access needs to be arranged (if necessary), the work needs to be completed and the result interpreted before the question of potential burials can be answered and the safe course of the gas supply line can be determined.

2. Directional boring beneath potential burials and location of the gas supply line under the cemetery. There are three items of concern with this approach. First, agreements as to the appropriate depth of the pipeline have to be reached. Second, adequate lay out areas need to be secured to provide for ingress and egress of the line beneath the property. Third, given the possible existence of burials in the area, and given that they may be Native American in origin, excavations at the points of entry and exit of the line will require monitoring by a qualified Native American representative and/or a qualified Archaeologist.

3. Relocation of the proposed line. Two possible relocation alternatives are discussed below.

The first alternative relocation of the line would involve crossing the road on the west of the cemetery, installing the gas supply line parallel to the south perimeter of the cemetery but on the south side of the road, and re-crossing the road east of the plot. Previous work in the area has shown that burials are present beneath the recently installed fence, beyond the former perimeter of the cemetery at least on the east and north sides of the plot. It is possible that additional burials might exist beyond the current fence in agricultural areas previously thought to be outside the cemetery. So, to

increase the probability of not encountering burials during the road crossing excavations, the crossings would have to be situated away from the east and west perimeter fences at a distance of 300 feet or more. There are three concerns with this approach to relocating the line. First, crossing the road twice would involve negotiating easement rights with the County at two locations. Second, there is no guarantee that there are no burials on the south side of Arno Road in property beyond (south of) the County Road easement. Third, given the possible existence of burials in the area, and given that they may be Native American in origin, excavations at the points of entry and exit of the line will require monitoring by a qualified Native American representative and/or a qualified Archaeologist. This is the recommended option.

The second relocation alternative involves routing the gas supply line to the north of the cemetery. Beginning west of the cemetery, an original 45 degree angle point would need to be located at a distance from the western cemetery perimeter which, as above, is suggested to be 300 feet. Once the 45 degree angle point is installed, the second angle point orienting the line east-west to bypass the northern boundary of the cemetery would need to be placed such that the supply line would maintain a safe distance (300 feet) from the cemetery. The remaining two angle points to return the line to its original east-west orientation would also require placement to maintain a safe distance from any interments. While this would likely insure safe passage by the cemetery it would require addition of angle points to the line as well as additional construction for installation. In addition, given the possible existence of burials in the area, and given that they may be Native American in origin, excavations at the points of entry and exit of the line will require monitoring by a qualified Native American representative and/or a qualified Archaeologist.

ACTION ITEMS:

Contact Tremaine and Associates about their product/service. DONE Dec 3, 2001, Tremaine & Associates, 240 West E. Street, Suite B, Dixon, California 95620, Phone 1 707 678 2330; FAX 1 707 471 6502. On the web at tremainecnrs.com/. They have the equipment and are ready to present a proposal if that alternative is selecgted.

Contact those in charge of cemetery administration today. If successful this approach might yield maps of the original cemetery plot which could be used to re-define the cemetery boundaries. It is also possible that Arno Road might be indicated on such a map as a nearby cultural feature for orientation. It also might be that information on the original cemetery enclosures/boundaries could be found.

2. Cosumnes River/Badger Creek Easement to the West between Hicksville Cemetery and the Drainages

Because of wet conditions, the group was unable to visit locations along the Cosumnes River. It was decided to wait for better weather to undertake that inspection and that Glen Villa Jr. and J. Nixon would schedule a co-visit to that portion of the project area for the purpose of walking and inspecting the easement from the cemetery to the river.

Previous archaeological work in the area has demonstrated the presence of prehistoric archaeological sites near the waterways. Site number CA-SAC-68 is described as located within 100 to 200 feet of the proposed gas supply line, along an old channel of the Cosumnes River (*need location map).* Site number CA-SAC-93, also a previously reported prehistoric site, is at a poorly understood location. It is alternately mapped as 100 feet away from the line, on the line, or 100-200 feet north of line (*need location map*). The presence of these two prehistoric resources near the Cosumnes River highlights the potential for the presence of additional cultural resources of similar types.

CONSTRUCTION OPTIONS:

Directional Boring beneath Cosumnes River Preserve. There are three items of concern with this approach. First, agreements as to the appropriate depth of the pipeline have to be reached. Second, adequate lay out areas need to be secured to provide for ingress and egress of the line beneath the property. Third, given the known existence of prehistoric cultural resources in the area, and its designation as a "High Potential Area", excavations from at least the Cosumnes River to Hicksville Cemetery will require monitoring by a qualified Native American representative and/or a qualified Archaeologist.

ACTION ITEMS:

Initiate contact between Glen Villa Jr. and J. Nixon to monitor weather and schedule next field visit/inspection. DONE: contact made December 5, 2001. Glen is watching the weather and field conditions from his venue in Ione.

3. Easement to the East between Hicksville Cemetery and Rancho Seco Power Plant

Randy Y. indicated that in the areas to the east of the cemetery between it and the Rancho Seco plant there are a couple of village sites and possibly some additional burials. No sites were identified in this area by CH2MHill during their survey of the easement. Joe agreed to share the CH2MHill report with Randy and he agreed to review the report and make EarthTech aware of any other sites that he knows about that are not included. It was discussed that if he can locate these on a map, then when Glen and Joe can meet in the field to walk the line from the cemetery to the creek, they can also inspect the locations provided by Randy.

CONSTRUCTION OPTIONS: N/A

ACTION ITEMS:

Contact CH@MHill/SMUD for permission to release the CH2MHill cultural section and survey area maps to Randy for his review. On approval, mail to Randy for his input in locating other areas of Native American concern on the eastern stretches of the proposed gas transmission line. DONE: Request made December 5, 2001. Glen is currently looking for an address for Randy (no e.mail availability).

On receipt of input from Randy, check his locations against location of easement to determine whether or not his locations are within the easement area of concern. Once complete, review additional areas of concern between Hicksville Cemetery and the Rancho Seco Plant to determine whether the density of prehistoric/protohistoric resources would warrant monitoring by a qualified Native American and/or a qualified Archaeologist.

Nota bona: In a conversation on December 6, 2001 (2:00 PM), Glen Villa Jr., representing the Ione Band of Miwok Indians, and Joseph Nixon, Earth Tech, mutually agreed to the text and the details of the approaches described in the field notes as above.

APPENDIX: Additional project related e.mail addresses:

Joe Pennington, (SMUD) [jpennin@smud.org]
Jose Vallenas, Earth Tech, Inc. [jose_vallenas@earthtech.com]
Dwight Dutschke [dutschke@volcano.net]
Kevin Hudson (SMUD) [khudson@smud.org]
John Carrier (CH2MHill) [jcarrier@ch2m.com]

MEETING SUMMARY CH2MHILL

American Indian Consultation for SMUD CPP Project

ATTENDEES: Randy Yonemura, Miwok Tribe
John Lopez, Tremain and Assoc.

COPIES: Kevin Hudson / SMUD
Jim Bard / CVO
Jim Sharpe / HAN

FROM: John L. Carrier, JD

DATE: January 15, 2002

I met at 3 p.m. today with Randy Yonemura and John Lopez. Randy had called earlier to ask if John could attend with him. John Lopez has worked with Randy on various projects in the past in the Sacramento Area.

I gave Randy copies of the following documents:

- 1 copy of the CHRIS reports that had been accumulated by Jim Bard for this project
- 1 copy of the GANDA report, "Cultural Resources Inventory of 220 Acres at the Rancho Seco Facility, Sacramento County, California."
- 1 color 11 x 17 copy of Confidential Figure 8.3-3 from the AFC
- 1 set of color 11 x 7 topo maps (prepared by WRMS) showing the areas surveyed by CH2M HILL and by others (Confidential Appendix 8.3D)
- 1 color copy of the site record for the site discovered by CH2M HILL during our pedestrian survey (Confidential Appendix 8.3E)

For control reasons, I told Randy that he could keep the documents as long as he needed them, but asked him to return them once he was finished.

John Lopez explained the electrical conductivity technology that Tremain & Associates uses to identify the locations of culturally sensitive sites, which will at the same time identify the location of existing underground infrastructure. I obtained copies of John's brochure for myself, Kevin Hudson, and Jim Bard.

Randy said that he planned to use this technology to make sure that the work was done right. He did not mention who would pay for its use. He also said that this project was discussed at the tribal council meeting last week. I asked Randy if he knew any of the tribe members in Wilton. He said that they were his family (cousins). I asked that he keep them informed about the project, which he said that he would do.

I informed Randy of the proposed walk along the pipeline route that is being planned for Saturday, January 26t^{h} and asked him to let me know if he would be available that day. Randy asked for a set of the aerial photos of the pipeline corridor once they were available. I said that I would pass that request along to SMUD.

Technical Area: Land Use
CEC Author: James Adams
CPP Author: Katy Carrasco

BACKGROUND

AFC Section 8.4.6, Cumulative Impacts, discusses the potential cumulative land use impacts that would result from the proposed project. The AFC discusses existing land uses in the vicinity of the proposed project, but does not identify existing or proposed projects along the proposed linear facility corridor.

DATA REQUEST

56. Please provide a map that shows the location of all cumulative projects identified including future projects along the proposed linear facility corridor (i.e., natural gas transmission line, and water line). This should also include projects that have been proposed since June 2001.

    Response: At the January 24, 2002 workshop, the Applicant agreed to discuss this issue with the County and, with the County's assistance, put together a list of projects in the vicinity that are anticipated to be under construction in 18 months. This is underway, and will be provided to the CEC upon receipt. A copy of the record of conversation with the County Planning Department is included as Attachment LU-56.

BACKGROUND

Section 6 of the AFC discusses the proposed route of the natural gas pipeline. Figure 6.1-1 shows these pipeline routes, several of which appear to enter the City of Elk Grove. There is no discussion of any applicable LORS that may apply to the proposed or alternate gas pipeline routes.

58. Please provide figures similar to AFC Figure 8.4-1 for the entire natural gas pipeline route and alternate routes. Please also provide total approximate lengths of each alternative alignment.

    Response: See Data Response #61a.

BACKGROUND

The proposed site is designated Agriculture, with minimal parcel size of 80 acres (AG-80). The California Department of Conservation, Office of Land Conservation has prepared a rating system for land resources called the California Agricultural Land Evaluation and Site Assessment (LESA). The use of LESA criteria provides a methodology for assessing the potential environmental impact of state and local projects on agricultural lands and its conversion. LESA provides an approach for rating the relative quality of land resources based upon specific measurable features. The California LESA is composed of six different factors. Two Land Evaluation factors area based upon measures of soil resource

quality. Four Site Assessment factors provide measures of a given project's size, water resource availability, surrounding agricultural lands, and surrounding protected resource lands.

DATA REQUEST

60. Please complete the California LESA application prepared by the California Department of Conservation, Office of Land Conservation, and provide the application and it's supporting documentation (i.e. maps, soil information, cropping patterns, etc.) to the Energy Commission. The application can be found at http://www.consrv.ca.gov/dlrp/LESA/LESA.htm.

Response: Based upon our discussion at the January 24, 2002 workshop, the Applicant is preparing the LESA form. It should be available by February 15, 2002.

BACKGROUND

The construction of the natural gas line is an important feature of this project since the proposed route is 26 miles long. More detailed information than provided on Figure 6.1.1 of the AFC is necessary to analyze the proposed and alternative natural gas pipeline alignments.

DATA REQUEST

61. For areas within ¼-mile on each side of the proposed and alternative natural gas pipeline ROW, provide a map illustrating each of the following:

    a. General plan land use designations,

Response: Based upon our discussion at the January 24, 2002 workshop, a map showing the General Plan designations is attached as Figures 8.4-2f through 8.4-2j.

Attachment LU-56

CH2MHILL TELEPHONE CONVERSATION RECORD

Call To: Rob Burness

Phone No.: (916) 874-6141 Date: January 30, 2002

Call From: Katy Carrasco Time: 09:49 AM

Message Taken By: Katy Carrasco

Subject: CPP Cumulative Impacts Land Use Data

I placed a call to Rob Burness on January 28th, 2002, subsequent to the CPP workshop on January 24th, 2002, at Jim Adams' suggestion. The purpose of the call was to request information on approved construction projects within a ¼ mile of the natural gas pipeline for the CPP project.

Mr. Burness explained that Jim Adams had contacted him recently for the same information. Mr. Burness told me that his staff had begun to prepare the information and that he expected it would be a week to 10 days from today to have the information completed. He indiciated he would send the information directly to Mr. Adams and copy me on the information. I told Mr. Burness that we would indicate to Mr. Adams that we were aware the data was being prepared and otherwise coordinate with either the County or CEC, as necessary.

INSERT Figures 8.4-2f to 2j

Technical Area: Noise
CEC Author: Jim Buntin
CPP Authors: Mark Bastasch and Farshad Farhang

BACKGROUND

The applicant presumes that compliance with the 45 dBA criterion of the LORS will be sufficient to avoid a significant noise effect, mitigated by the offer to provide additional sound insulation for affected residences. The applicant's data indicates compliance with the 45 dBA criterion would result in an increase of about 11 dBA to 17 dBA, based upon the L_{90} values measured at Site M1 during the quietest hours of the day and night. This will be excessive in terms of producing a significant change in background noise levels, as the Energy Commission staff has concluded that a potential for a significant noise impact exists where the noise of the project plus the background exceeds the background by 5 dBA L_{90} or more at the nearest location where the sound is likely to be perceived.

However, staff will carefully consider the question of establishing a reasonable and practical noise standard for very quiet environments. With this in mind, it will be useful to know the practical effects of setting a noise standard which allows an increase in background noise levels greater than 5 dBA, while limiting the noise level to the maximum practical extent. For example, the Model Community Noise Control Ordinance prepared by the State Office of Noise Control suggests a nighttime exterior noise level standard of 40 dBA for rural suburban land uses.

DATA REQUEST

62. Please provide an acoustical analysis to address compliance with a noise standard of 40 dBA L90 at the nearest residences. Include a listing of any additional required noise control measures.

    Response: To facilitate efficiency, constructability and plant design, some of the major equipment has been rearranged. A new site plan was recently received and a new noise analysis will be performed to assess noise impacts. The noise modeling results will be included in an AFC Supplement that will be prepared to address this change. The Supplement should be submitted in February 2002.

64. Please provide a map or a listing showing the sensitive receptors that are predicted to be exposed to plant operation noise levels which exceed the typical quietest ambient L90 values by 5 dBA.

    Response: See Data Response #62.

65. Using the responses to the two previous questions, please address the question of whether the noise level data collected at site M1 reasonably represent the noise exposure at the residences affected.

Response: See Data Response #62.

Technical Area: Transmission System Engineering
CEC Author: Laiping Ng
CPP Author: Gil Butler

BACKGROUND

On page 2 of the Cosumnes Power Plant Transmission System Impact Study (SIS), it states that "the proposed Roseville and Colusa generation projects were not included". The Colusa Power Plant and the Roseville Power Plant are proposed to be online/operational by the second quarter 2002 and the fourth quarter 2004, respectively. The Cosumnes Power Plant is proposed to be online during the first quarter of 2005 for Phase I and by first quarter 2008 for Phase II. Staff needs additional documentation and information regarding the System Impact Study for the year 2007 and proposed mitigation measures in order to prepare the Staff Assessment for the Cosumnes Power Plant.

DATA REQUEST

86. Please include the Colusa and Roseville projects in the SIS. Analyze the system impact with and without the project during peak and off-peak system conditions, which will demonstrate conformance or non-conformance with the WSCC and NERC reliability and planning criteria with the following provisions:

    a. Identify major assumptions in the base cases including imports to the system, major generation and load changes in the system and queue generation.

    b. Analyze system for N-0, important N-1 and critical N-2 contingency conditions and provide a list of criteria violations in a table showing the loadings before and after adding the new generation.

    c. Provide a list of contingencies evaluated for each study.

    d. Provide power flow diagrams (MW, % loading & per unit voltage) for base cases with and without the project. Power flow diagrams must also be provided for all N-0, N-1 and N-2 studies where overloads or voltage violations appear.

    e. List mitigation measures considered and those selected for all criteria violations.

    f. Provide electronic copies of *.sav and *.drw PSLF files.

    Response: The CPP Transmission System Impact Sensitivity Study is included as Attachment TSE-86.

Attachment TSE-86

Cosumnes Power Plant
Transmission System Impact Sensitivity Study

Sacramento Municipal Utility District
January 25, 2002

1. Introduction

This is a sensitivity study to supplement the Cosumnes Power Plant Transmission System Impact Study dated August 21, 2001. That study did not include the Roseville Energy Facility, with an impact study submitted to the California Energy Commission (CEC) during September and October, 2001, and the Reliant Energy Colusa Project with an impact study dated September, 2001.

The Roseville Energy Facility has identified an interconnection scheme that is intended to result in fewer local overloaded facilities than other plans investigated. Western Area Power Administration (Western) performed the studies, and stated that this issue should be further investigated in a joint study group to address the best way to interconnect the Roseville project along with addressing other regional transmission issues. Their interim plan was developed under confidentiality requirements imposed by the project proponent, and did not provide for input from other impacted entities. That plan involves multiple interconnections with Sacramento Municipal Utility District (SMUD), but SMUD provided no input to that plan, has not further evaluated that plan, and has not made any agreement to accept that plan.

Western has publicly advocated regional joint studies to address the impacts of interconnecting the Roseville Energy Facility, the Rio Linda/Elverta project and the Sutter Power Plant (1,985 MW combined capacity) with the Western transmission system near the northern boundary of the SMUD transmission system, along with any other regional problems. Results of such studies will likely result in substantial enhancements to the existing system and may well involve new 500 kV transmission and interconnections. A regional plan to address these issues will certainly change the potential impacts of those generation plants and the Cosumnes Power Plant.

Since the Roseville Energy Facility and the Rio Linda/Elverta project are ahead of the Cosumnes Power Plant in the CEC queue, SMUD and the CEC staff have agreed that it is appropriate at this time to estimate the impacts of the Cosumnes Power Plant based on the study cases as they have been developed by Western to date, realizing that existing impacts have not been mitigated and that the final configuration for integrating the Roseville Energy Facility and the Rio Linda/Elverta project may be substantially different than that included in the present studies.

Both the heavy Summer and Spring cases included a number of unresolved system overloads. This sensitivity study identifies impacts by the Cosumnes Power Plant on those overloads as well as the introduction of any new overloads.

2. Project Description

The Cosumnes Power Plant project is proposed to be combined cycle gas and steam turbine generation with heat recovery steam generator located approximately

¼ mile from the existing 230 kV switchyard at Rancho Seco. Rancho Seco, in the south-east portion of the SMUD service area, is the site of the 1000 MW Rancho Seco Nuclear Generation Plant permanently removed from service in 1989.

3. Summary of Study Results

These sensitivity studies considered non-outage conditions, 90 selected single contingency outages and 4 major double-line outages. Both the heavy Summer and Spring cases include more than 3,600 MW of generation in or adjacent to SMUD (including the Roseville Energy Facility, the Rio Linda/Elverta project, the Sutter Power Plant and the Cosumnes Power Plant), all represented at their rated outputs.

Although the following impacts are indicated as related to addition of the Cosumnes Power Plant, during the heavy Summer conditions, SMUD would not be in a position to export power but would have to import more than 900 MW, even after adding Cosumnes and operating its remaining generation at full output.

The Spring conditions reflect a SMUD and Roseville combined load that is less than 10% of the PG&E area load but an area generation that is 20% of the total PG&E area generation requiring an export from the SMUD area of 1,800 MW, an extreme generation imbalance.

These heavy Summer conditions indicate that the addition of the Cosumnes Power Plant could overload the Warnerville 230/115 kV transformers by 7.5 MVA and 15 MVA (0.75% and 1.5% of the Cosumnes output), and overload the Colusa transformer by 9.5 MVA and the Colusa to Cortina 230 kV line by 11.1 MVA (0.95% and 1.11% of the Cosumnes output). These same conditions indicate that the addition of the Cosumnes Power Plant could reduce existing potential overloads on the O'Banion to Elverta 230 kV line and eliminate the existing potential overloads on the Hurley to Procter and Procter to Hedge 230 kV lines, the Hurley 230/115 kV transformer and the Elverta to North City 115 kV line.

These Spring conditions indicate that addition of the Cosumnes Power Plant could overload the Hurley to Tracy 230 kV lines by 55% and overload the Tracy to Tesla 230 kV lines by 22% during a double-line outage of both of the Rancho Seco to Bellota 230 kV lines, and overload a Rancho Seco to Bellota line by 13% during an outage of the other Rancho Seco to Bellota parallel line. These conditions also indicate several benefits, including the elimination of existing overloads on the Hurley to Procter and Procter to Hedge 230 kV transmission lines during the normal and double contingency outages studied.

The previous studies for the addition of the Cosumnes Power Plant included the Rio Linda/Elverta project but not the Roseville Energy Facility or the Colusa project. Those studies did not indicate any significant impacts for adding the Cosumnes Power Plant.

In the event that both the Rio Linda/Elverta project and the Roseville Energy Facility are actually constructed, and Western is not successful in resolving, through a regional planning effort, the problems associated with interconnecting these projects to their existing system, then SMUD should discuss the overload of the Warnerville transformers with PUC of the City and County of San Francisco and work with PG&E, Western and the CAISO to develop adequate operational and/or construction mitigation based on mutually acceptable study assumptions.

4. Study Assumptions

Western readily provided the 2005 heavy Summer and the 2005 Spring base case data used for this study as it has been developed for the Roseville Energy Facility system impact study, and the file used to produce the attached power flow diagrams.

Both base cases include the following generation projects of interest at their rated outputs:

- Roseville Energy Facility (900 MW)
- Rio Linda/Elverta Project (560 MW)
- Reliant Energy Colusa Project (630 MW)
- East Altamont Energy Center (1070 MW)
- Sutter Power Plant (525 MW)

The heavy Summer case represents the PG&E area load at 26,843 MW, which includes a SMUD load of 3,172 MW and a Roseville load of 343 MW. Total PG&E area generation is 26,957 MW, which includes SMUD generation (without Cosumnes) at 1,061 MW and the generation projects of interest listed above at their rated outputs. COI import is 3,632 MW and the export to southern California is 2,842 MW.

When the Cosumnes Power Plant was added to the heavy Summer case, the generation projects of interest listed above were held at their rated outputs and the remainder of the PG&E area generation was reduced in proportion to individual generator outputs.

The Spring case represents the PG&E area load at 18,580 MW, which includes a SMUD load of 1,651 MW and a Roseville load of 165 MW. Total PG&E area generation is 20,471 MW, which includes the generation projects of interest listed above at their rated outputs.

When the Cosumnes Power Plant was added to the Spring case, the generation projects of interest listed above were held at their rated outputs and the remainder of the PG&E area generation was reduced in proportion to their individual generator outputs. Some capacitors in the SMUD service area were removed to reduce local high voltages, and four of the six generators at Tesla, which were removed to

accommodate the Roseville Energy Facility, were replaced with corresponding reductions in Diablo Canyon and Moss Landing generation.

5. Attached Tables and Plots

Appendix A includes tables of all overloaded lines and transformers identified in the PG&E service area for heavy Summer and Spring cases, both with and without the Cosumnes project, for normal (no outage) conditions and selected major double-line outages. Each table compares element loads (MVA and percent rating) before and after adding the Cosumnes Power Plant. The tables are sorted by differences in percent rated loading. Normal ratings are used for normal conditions and emergency ratings are used for outage conditions.

Appendix B includes TransferLimit output listing that identify additional overloads and margins for 90 selected outages within the PG&E area, along with a list of the outages and monitored elements. The listings are provided for the heavy Summer and Spring cases, both before and after adding the Cosumnes Power Plant. The TransferLimit listings are provided primarily to identify additional overloads resulting from the 90 single contingency outages considered. Slight differences are observed between the tables in Appendix A and Appendix B as element loadings are calculated using MVA in Appendix A and MW in Appendix B.

Appendix C includes power flow diagrams for heavy Summer and Spring cases, both before and after adding the Cosumnes Power Plant, for normal (no outage) conditions and for selected single-line and major double-line outages.

6. Heavy Summer Study Results

For the heavy Summer normal conditions studies (Table 1, Appendix A), addition of the Cosumnes Power Plant results in 8.7% overloads on the three Warnerville 230/115 kV transformers. The additional flows are 7.5 MVA and 15.1 MVA, 0.75% and 1.5% of the Cosumnes output respectively. Concerns about the Warnerville transformers were previously identified in the system impact study for the Central Valley Energy Center (1,097 MW), which is also included in this study.

Additionally, adding the Cosumnes Power Plant results in a 0.1% overload on the Bellota to Cottle 230 kV line, a 1.5% overload on a Cortina transformer model and increases the existing overload on the Colusa to Cortina 230 kV line from 1.0% to 4.3%. The increases at and to Cortina are 9.5 MVA and 11.1 MVA, 0.95% and 1.11% of the Cosumnes output respectively.

The addition of the Cosumnes Power Plant eliminates the existing 8.8% overload on the Hurley to Procter 230 kV line (reducing the flow by 235.8 MVA) and the existing

22.4% overload on the Hedge to Procter 230 kV line (reducing the flow by 237.7 MVA).

The remaining impacts by the Cosumnes Power Plant during normal heavy Summer conditions as shown in Table 1 (Appendix A) are either negligible or positive.

Tables 2 through 5 (Appendix A) show that during the Rancho Seco to Bellota 230 kV double-line outage, the Rancho Seco to Pocket 230 kV double-line outage, the Hurley to Tracy 230 kV double-line outage and the O'Banion to Elverta 230 kV double-line outage, addition of the Cosumnes Power Plant results in essentially the same impacts at Warnerville and Cortina and similar benefits to the Hurley to Procter and Hedge to Procter lines.

The first TransferLimit output in Appendix B (pages B-1 and B-2) indicates new overloads during the outages considered and before addition of the Cosumnes Power Plant. Both of the O'Banion to Elverta 230 kV lines overload to 46.8% above their emergency ratings during an outage of the other parallel line. The Hurley 230/115 kV transformer overloads by 22.2% during an outage of the Hedge to Procter 230 kV line, and by 7.9% during an outage of the Hurley to Procter 230 kV line, and by 4.4 % during an outage of the Elverta to North City 115 kV line. The Warnerville #1 230/115 kV transfer overloads by 18.5% during an outage of either of the other two Warnerville 230/115 kV transformers and by 0.7% during an outage of the Storey to Warnerville 230 kV line. The Elverta to North City 115 kV line overloads by 7.0% during an outage of the Hedge to Procter 230 kV line and by 5.5% during an outage of the Hurley 230/115 kV transformer.

The second TransferLimit Output (pages B-3 and B-4) indicates that adding the Cosumnes Power Plant reduces the single contingency overloads on the O'Banion to Elverta lines from 46.8% to 24.6% and eliminates all of the single contingency overloads on the Hurley 230/115 kV transformer and Elverta to North City 115 kV lines. This version of the TransferLimit program does not address the Warnerville transformer overloads for single contingencies since it already identified a problem during normal conditions (also discussed above).

The heavy Summer normal, single-contingency and double-contingency sensitivity conditions studied show that addition of the Cosumnes Power Plant can cause negative impacts to the Warnerville 230/115 kV transformers, the Cortina transformer and the 230 kV line from the Colusa project to Cortina. Those studies also show positive impacts on the Hurley to Procter 230 kV line, the Procter to Hedge 230 kV line, the O'Banion to Elverta 230 kV line, the Hurley 230/115 kV transformer, and the Elverta to North City 115 kV line. The positive impacts identified are, for the most part, significantly more substantial than the negative impacts, with the remaining impacts ranging from negligible to somewhat positive.

7. Spring Study Results

As shown in Table 6 (page A-4), during the Spring normal conditions studied the addition of the Cosumnes Power Plant provides indicated impacts ranging from neutral to significantly positive, with the major benefit being the elimination of existing overloads on the Hurley to Procter and Procter to Hedge 230 kV transmission lines.

Tables 7 through 10 (pages A-5 and A-6) show that the Rancho Seco to Pocket 230 kV double-line outage, the Hurley to Tracy 230 kV double-line outage and the O'Banion to Elverta 230 kV double-line outage, addition of the Cosumnes Power Plant results in essentially the same impacts as for the normal conditions, with similar benefits to the Hurley to Procter and Hedge to Procter lines.

During the Rancho Seco to Bellota 230 kV double-line outage, however, addition of the Cosumnes Power Plant results in substantial impacts on the Hurley to Tracy and Tracy to Tesla 230 kV lines for the conditions studied. The Hurley to Tracy lines become overloaded by 55.4% and 51.8% respectively, and the existing overloads on the Tracy to Tesla lines increase from 6.0% to 23.1%.

The TransferLimit output listing for the Spring case before addition of the Cosumnes Power Plant (page B-5) indicates no new overloaded elements during the 90 contingencies considered. After addition of the Cosumnes Power Plant (page B-6), a potential overload of 13.3% is identified for either of the Rancho Seco to Bellota 230 kV lines during an outage of the other parallel line.

Table 1

Power Flows Without and With Cosumnes Generation
2005 Heavy Summer, New Generation at Elverta, Roseville and Colusa

					Cosumnes Generation					
					0 MW		1000 MW		Differences	
Name	kV	Name	kV	ckt	MVA	%Rate	MVA	%Rate	MVA	%Rate
BELLOTA	230.00	COTTLE B	230.00	1	163.6	64.1	256.3	100.1	92.7	36.0
WARNERVL	230.00	WRNRVLLE	115.00	3	74.0	98.6	81.5	108.7	7.5	10.1
WARNERVL	230.00	WRNRVLLE	115.00	2	74.0	98.6	81.5	108.7	7.5	10.1
WARNERVL	230.00	WRNRVLLE	115.00	1	147.9	98.6	163.0	108.6	15.1	10.0
CORTINA	230.00	CRTNA M	230.00	1	161.0	95.8	170.5	101.5	9.5	5.7
REL CLUS	230.00	CORTINA	230.00	1	347.9	101.0	359.0	104.3	11.1	3.3
MANTECA	115.00	MANTECA	60.00	3	33.1	106.1	33.7	107.9	0.6	1.8
LOCKFORD	230.00	LOCKEFRD	60.00	2	165.7	123.3	165.8	123.4	0.1	0.1
BLLTA 1M	230.00	BELLTA T	13.80	1	38.0	100.0	38.0	100.0	0.0	0.0
BLLTA 1M	230.00	BELLTA T	13.80	1	38.0	100.0	38.0	100.0	0.0	0.0
LS ESTRS	115.00	NORTECH	115.00	1	310.6	106.5	310.0	106.4	-0.6	-0.1
TRIMBLE	115.00	SJ B E	115.00	1	146.2	102.5	145.6	102.2	-0.6	-0.3
PANOCHE	230.00	PNCHE 2M	230.00	2	132.2	108.6	130.0	106.7	-2.2	-1.9
PNCHE 2M	230.00	PANOCHE	115.00	2	130.5	107.2	128.3	105.3	-2.2	-1.9
AM FORST	60.00	MARTELL	9.11	1	12.7	102.4	12.4	100.1	-0.3	-2.3
SOUTH	60.00	SOUTH G	9.11	1	7.5	100.4	7.3	96.8	-0.2	-3.6
TRINTY12	13.80	TRINITY	230.00	1	129.7	99.8	124.4	95.7	-5.3	-4.1
ROBBS PK	69.00	ROBBS PK	13.80	1	24.7	101.4	23.7	97.2	-1.0	-4.2
DTCH FL2	115.00	DTCHFLT2	6.90	1	25.4	101.2	24.4	97.0	-1.0	-4.2
HIWD TAP	230.00	HIWD HIT	34.50	1	150.2	100.7	143.8	96.5	-6.4	-4.2
ELVERTAS	230.00	NATOMAS	230.00	1	388.3	128.8	363.8	120.3	-24.5	-8.5
HURLEY S	230.00	PROCTER	230.00	1	375.0	124.4	128.2	42.4	-246.8	-82.0

Table 2

Power Flows Without and With Cosumnes Generation
2005 Heavy Summer, New Generation at Elverta, Roseville and Colusa

Elverta to O'Banion 230 kV Lines 1 and 2 Out

					Cosumnes Generation					
					0 MW		1000 MW		Differences	
Name	kV	Name	kV	ckt	MVA	%Rate	MVA	%Rate	MVA	%Rate
WARNERVL	230.00	WRNRVLLE	115.00	3	69.9	93.2	78.2	104.3	8.3	11.1
WARNERVL	230.00	WRNRVLLE	115.00	2	69.9	93.2	78.2	104.3	8.3	11.1
WARNERVL	230.00	WRNRVLLE	115.00	1	139.8	93.2	156.4	104.3	16.6	11.1
CORTINA	230.00	CRTNA M	230.00	1	165.5	98.5	173.8	103.5	8.3	5.0
BLLTA 1M	230.00	BELLTA T	13.80	1	38.0	100.0	38.0	100.0	0.0	0.0
LOCKFORD	230.00	LOCKEFRD	60.00	2	165.9	102.9	165.9	102.8	0.0	-0.1
TRINTY12	13.80	TRINITY	230.00	1	133.5	102.7	131.6	101.2	-1.9	-1.5
HIWD TAP	230.00	HIWD HIT	34.50	1	150.0	101.0	143.7	96.8	-6.3	-4.2
ROBBS PK	69.00	ROBBS PK	13.80	1	24.7	101.5	23.7	97.2	-1.0	-4.3
DTCH FL2	115.00	DTCHFLT2	6.90	1	25.8	102.8	24.6	97.9	-1.2	-4.9
AM FORST	60.00	MARTELL	9.11	1	13.1	106.1	12.4	100.5	-0.7	-5.6

Table 3

Power Flows Without and With Cosumnes Generation
2005 Heavy Summer, New Generation at Elverta, Roseville and Colusa

Rancho Seco to Bellota 230 kV Lines 1 and 2 Out

					Cosumnes Generation					
					0 MW		1000 MW		Differences	
Name	kV	Name	kV	ckt	MVA	%Rate	MVA	%Rate	MVA	%Rate
CORTINA	230.00	CRTNA M	230.00	1	160.9	95.8	172.1	102.4	11.2	6.6
LOCKFORD	230.00	LOCKEFRD	60.00	2	165.6	102.6	165.8	102.8	0.2	0.2
BLLTA 1M	230.00	BELLTA T	13.80	1	38.0	100.0	38.0	100.0	0.0	0.0
SOUTH	60.00	SOUTH G	9.11	1	7.5	100.2	7.2	96.5	-0.3	-3.7
DTCH FL2	115.00	DTCHFLT2	6.90	1	25.4	101.0	24.4	97.2	-1.0	-3.8
HIWD TAP	230.00	HIWD HIT	34.50	1	150.2	100.6	143.8	96.6	-6.4	-4.0
ROBBS PK	69.00	ROBBS PK	13.80	1	24.7	101.7	23.7	97.4	-1.0	-4.3
ELVERTAS	230.00	NATOMAS	230.00	1	388.7	111.6	341.3	97.7	-47.4	-13.9
HURLEY S	230.00	PROCTER	230.00	1	381.9	109.9	177.2	50.9	-204.7	-59.0

Table 4

Power Flows Without and With Cosumnes Generation
2005 Heavy Summer, New Generation at Elverta, Roseville and Colusa

Hurley to Tracy 230 kV Lines 1 and 2 Out

					Cosumnes Generation					
					0 MW		1000 MW		Differences	
Name	kV	Name	kV	ckt	MVA	%Rate	MVA	%Rate	MVA	%Rate
WARNERVL	230.00	WRNRVLLE	115.00	3	73.3	97.7	83.1	110.8	9.8	13.1
WARNERVL	230.00	WRNRVLLE	115.00	2	73.3	97.7	83.1	110.8	9.8	13.1
WARNERVL	230.00	WRNRVLLE	115.00	1	146.5	97.7	166.1	110.8	19.6	13.1
CORTINA	230.00	CRTNA M	230.00	1	160.8	95.7	170.9	101.8	10.1	6.1
BLLTA 1M	230.00	BELLTA T	13.80	1	38.0	100.0	38.0	100.0	0.0	0.0
LOCKFORD	230.00	LOCKEFRD	60.00	2	165.8	102.8	165.8	102.8	0.0	0.0
AM FORST	60.00	MARTELL	9.11	1	12.8	103.1	12.5	100.8	-0.3	-2.3
SOUTH	60.00	SOUTH G	9.11	1	7.5	100.4	7.3	96.8	-0.2	-3.6
HIWD TAP	230.00	HIWD HIT	34.50	1	150.2	100.6	143.8	96.5	-6.4	-4.1
ROBBS PK	69.00	ROBBS PK	13.80	1	24.7	101.6	23.7	97.3	-1.0	-4.3
DTCH FL2	115.00	DTCHFLT2	6.90	1	25.5	101.3	24.4	96.9	-1.1	-4.4
HURLEY S	230.00	PROCTER	230.00	1	356.0	102.5	188.2	54.0	-167.8	-48.5

Table 5

Power Flows Without and With Cosumnes Generation
2005 Heavy Summer, New Generation at Elverta, Roseville and Colusa

Rancho Seco to Pocket 230 kV Lines 1 and 2 Out

					Cosumnes Generation					
					0 MW		1000 MW		Differences	
Name	kV	Name	kV	ckt	MVA	%Rate	MVA	%Rate	MVA	%Rate
WARNERVL	230.00	WRNRVLLE	115.00	3	73.8	98.5	81.9	109.3	8.1	10.8
WARNERVL	230.00	WRNRVLLE	115.00	2	73.8	98.5	81.9	109.3	8.1	10.8
WARNERVL	230.00	WRNRVLLE	115.00	1	147.7	98.5	163.9	109.2	16.2	10.7
CORTINA	230.00	CRTNA M	230.00	1	161.0	95.8	170.4	101.4	9.4	5.6
LOCKFORD	230.00	LOCKEFRD	60.00	2	165.7	102.7	165.8	102.8	0.1	0.1
BLLTA 1M	230.00	BELLTA T	13.80	1	38.0	100.0	38.0	100.0	0.0	0.0
AM FORST	60.00	MARTELL	9.11	1	12.7	102.5	12.4	100.5	-0.3	-2.0
SOUTH	60.00	SOUTH G	9.11	1	7.5	100.4	7.3	96.8	-0.2	-3.6
DTCH FL2	115.00	DTCHFLT2	6.90	1	25.4	101.2	24.4	97.0	-1.0	-4.2
HIWD TAP	230.00	HIWD HIT	34.50	1	150.2	100.7	143.8	96.5	-6.4	-4.2
ELVERTAS	230.00	NATOMAS	230.00	1	388.6	111.3	362.2	103.5	-26.4	-7.8
HURLEY S	230.00	PROCTER	230.00	1	372.8	107.0	128.4	36.8	-244.4	-70.2

Table 6

Power Flows Without and With Cosumnes Generation
2005 Spring, New Generation at Elverta, Roseville and Colusa

					Cosumnes Generation					
					0 MW		1000 MW		Differences	
Name	kV	Name	kV	ckt	MVA	%Rate	MVA	%Rate	MVA	%Rate
TESLA D	230.00	TRCY PMP	230.00	1	381.3	112.0	379.3	112.0	-2.0	0.0
TESLA D	230.00	TRCY PMP	230.00	2	381.3	112.0	379.3	112.0	-2.0	0.0
WEBER 1	60.00	WEBER 2	60.00	1	132.2	103.7	129.9	102.9	-2.3	-0.8
GODN_BER	115.00	OILDALE	9.11	1	34.8	101.1	32.9	95.6	-1.9	-5.5
SOUTH	60.00	SOUTH G	9.11	1	7.6	101.5	7.2	95.9	-0.4	-5.6
SPRNG GP	115.00	SPRNG GP	6.00	1	7.6	101.3	7.2	95.6	-0.4	-5.7
DRUM	115.00	DRUM 5	13.80	1	50.5	106.3	47.5	100.2	-3.0	-6.1
PLCRVLB2	115.00	CHILIBAR	4.16	1	7.3	104.3	6.9	98.1	-0.4	-6.2
CAWELO C	115.00	MT POSO	9.11	1	90.1	104.7	84.7	98.4	-5.4	-6.3
FRNCH MS	60.00	FRNCH MD	4.16	1	18.1	106.3	17.0	100.0	-1.1	-6.3
KNGS RVR	115.00	KINGSRIV	13.80	1	51.5	105.0	48.0	97.9	-3.5	-7.1
ELVERTAS	230.00	NATOMAS	230.00	1	345.5	114.0	322.4	106.5	-23.1	-7.5
LAKE	230.00	FOLSOM	230.00	1	319.2	105.5	272.3	90.2	-46.9	-15.3
COLNGA 2	70.00	CHV.COAL	9.11	1	18.5	132.4	16.3	116.3	-2.2	-16.1
HURLEY S	230.00	PROCTER	230.00	1	329.0	108.8	93.2	30.9	-235.8	-77.9
HEDGE	230.00	PROCTER	230.00	1	368.9	122.4	131.2	43.6	-237.7	-78.8

Table 7

Power Flows Without and With Cosumnes Generation
2005 Spring Summer, New Generation at Elverta, Roseville and Colusa

Elverta to O'Banion 230 kV Lines 1 and 2 Out

					Cosumnes Generation					
					0 MW		1000 MW		Differences	
Name	kV	Name	kV	ckt	MVA	%Rate	MVA	%Rate	MVA	%Rate
WEBER 1	60.00	WEBER 2	60.00	1	132.6	103.9	130.6	103.1	-2.0	-0.8
RD MT 1M	500.00	ROUND MT	230.00	1	878.3	105.5	834.8	100.3	-43.5	-5.2
GODN_BER	115.00	OILDALE	9.11	1	34.8	101.0	32.8	95.5	-2.0	-5.5
ROUND MT	500.00	RD MT 1M	500.00	1	914.1	108.8	867.1	103.2	-47.0	-5.6
SOUTH	60.00	SOUTH G	9.11	1	7.6	101.5	7.2	95.8	-0.4	-5.7
SPRNG GP	115.00	SPRNG GP	6.00	1	7.6	101.3	7.2	95.6	-0.4	-5.7
DRUM	115.00	DRUM 5	13.80	1	50.5	106.4	47.6	100.2	-2.9	-6.2
PLCRVLB2	115.00	CHILIBAR	4.16	1	7.3	104.3	6.9	98.1	-0.4	-6.2
CAWELO C	115.00	MT POSO	9.11	1	90.1	104.7	84.7	98.4	-5.4	-6.3
FRNCH MS	60.00	FRNCH MD	4.16	1	18.1	106.3	17.0	100.0	-1.1	-6.3
KNGS RVR	115.00	KINGSRIV	13.80	1	51.5	105.1	48.0	98.0	-3.5	-7.1
COLNGA 2	70.00	CHV.COAL	9.11	1	18.8	134.2	16.6	118.5	-2.2	-15.7

Table 8

Power Flows Without and With Cosumnes Generation
2005 Spring Summer, New Generation at Elverta, Roseville and Colusa

Hurley to Tracy 230 kV Lines 1 and 2 Out

					Cosumnes Generation					
					0 MW		1000 MW		Differences	
Name	kV	Name	kV	ckt	MVA	%Rate	MVA	%Rate	MVA	%Rate
LAKE	230.00	FOLSOM	230.00	1	402.2	115.3	398.3	114.5	-3.9	-0.8
WEBER 1	60.00	WEBER 2	60.00	1	131.3	103.4	127.9	102.1	-3.4	-1.3
ROUND MT	500.00	RD MT 1M	500.00	1	845.8	100.7	834.4	99.3	-11.4	-1.4
PLCRVLB2	115.00	CHILIBAR	4.16	1	7.3	104.3	834.4	99.3	827.1	-5.0
GODN_BER	115.00	OILDALE	9.11	1	34.8	101.1	32.9	95.6	-1.9	-5.5
DRUM	115.00	DRUM 5	13.80	1	50.5	106.3	47.7	100.6	-2.8	-5.7
SOUTH	60.00	SOUTH G	9.11	1	7.6	101.5	7.2	95.8	-0.4	-5.7
SPRNG GP	115.00	SPRNG GP	6.00	1	7.6	101.3	7.2	95.6	-0.4	-5.7
CAWELO C	115.00	MT POSO	9.11	1	90.1	104.7	84.7	98.4	-5.4	-6.3
FRNCH MS	60.00	FRNCH MD	4.16	1	18.1	106.3	17.0	100.0	-1.1	-6.3
KNGS RVR	115.00	KINGSRIV	13.80	1	51.4	105.0	47.9	97.3	-3.5	-7.7
COLNGA 2	70.00	CHV.COAL	9.11	1	18.4	131.5	16.1	115.0	-2.3	-16.5
HURLEY S	230.00	PROCTER	230.00	1	467.5	134.1	304.4	87.3	-163.1	-46.8
HEDGE	230.00	PROCTER	230.00	1	505.4	145.7	340.6	98.1	-164.8	-47.6

Table 9

Power Flows Without and With Cosumnes Generation
2005 Spring Summer, New Generation at Elverta, Roseville and Colusa

Rancho Seco to Pocket 230 kV Lines 1 and 2 Out

					Cosumnes Generation					
					0 MW		1000 MW		Differences	
Name	kV	Name	kV	ckt	MVA	%Rate	MVA	%Rate	MVA	%Rate
HURLEY S	230.00	TRCY PMP	230.00	2	259.1	81.6	486.4	155.4	227.3	73.8
HURLEY S	230.00	TRCY PMP	230.00	1	253.2	79.8	475.0	151.8	221.8	72.0
TESLA D	230.00	TRCY PMP	230.00	1	415.4	106.0	478.0	123.1	62.6	17.1
TESLA D	230.00	TRCY PMP	230.00	2	415.4	106.0	478.0	123.1	62.6	17.1
ROUND MT	500.00	RD MT 1M	500.00	1	840.4	100.1	859.7	102.3	19.3	2.2
WEBER 1	60.00	WEBER 2	60.00	1	133.1	104.0	131.4	103.4	-1.7	-0.6
DRUM	115.00	DRUM 5	13.80	1	50.5	106.2	47.7	100.7	-2.8	-5.5
GODN_BER	115.00	OILDALE	9.11	1	34.8	101.0	32.8	95.5	-2.0	-5.5
SOUTH	60.00	SOUTH G	9.11	1	7.6	101.5	7.2	95.8	-0.4	-5.7
SPRNG GP	115.00	SPRNG GP	6.00	1	7.6	101.3	7.2	95.6	-0.4	-5.7
PLCRVLB2	115.00	CHILIBAR	4.16	1	7.3	104.3	6.9	98.1	-0.4	-6.2
CAWELO C	115.00	MT POSO	9.11	1	90.1	104.7	84.7	98.4	-5.4	-6.3
FRNCH MS	60.00	FRNCH MD	4.16	1	18.1	106.3	17.0	100.0	-1.1	-6.3
KNGS RVR	115.00	KINGSRIV	13.80	1	51.5	105.1	48.1	98.1	-3.4	-7.0
COLNGA 2	70.00	CHV.COAL	9.11	1	18.7	133.8	17.0	121.3	-1.7	-12.5

Table 10

Power Flows Without and With Cosumnes Generation
2005 Spring Summer, New Generation at Elverta, Roseville and Colusa

Rancho Seco to Pocket 230 kV Lines 1 and 2 Out

					Cosumnes Generation					
					0 MW		1000 MW		Differences	
Name	kV	Name	kV	ckt	MVA	%Rate	MVA	%Rate	MVA	%Rate
WEBER 1	60.00	WEBER 2	60.00	1	132.2	103.7	129.8	102.8	-2.4	-0.9
GODN_BER	115.00	OILDALE	9.11	1	34.8	101.1	32.9	95.6	-1.9	-5.5
SOUTH	60.00	SOUTH G	9.11	1	7.6	101.5	7.2	95.9	-0.4	-5.6
SPRNG GP	115.00	SPRNG GP	6.00	1	7.6	101.3	7.2	95.6	-0.4	-5.7
DRUM	115.00	DRUM 5	13.80	1	50.5	106.3	47.6	100.2	-2.9	-6.1
PLCRVLB2	115.00	CHILIBAR	4.16	1	7.3	104.3	6.9	98.1	-0.4	-6.2
CAWELO C	115.00	MT POSO	9.11	1	90.1	104.7	84.7	98.4	-5.4	-6.3
FRNCH MS	60.00	FRNCH MD	4.16	1	18.1	106.3	17.0	100.0	-1.1	-6.3
KNGS RVR	115.00	KINGSRIV	13.80	1	51.5	105.0	48.0	97.9	-3.5	-7.1
COLNGA 2	70.00	CHV.COAL	9.11	1	18.5	132.5	16.3	116.3	-2.2	-16.2
HEDGE	230.00	PROCTER	230.00	1	365.9	105.1	131.4	37.8	-234.5	-67.3

Base Case Title:

PG&E 2001 TRANSMISSION ASSESSMENT STUDY
2005 Area 5 Summer Peak System Case
Added Enron's REF connected to Elverta & Roseville sub.

Transfer Schedule Case Title:

PG&E 2001 TRANSMISSION ASSESSMENT STUDY
2005 Area 5 Summer Peak System Case
Added Enron's REF connected to Elverta & Roseville sub.
Increase REF Generation 20 MW for TransferLimit Sensitivity Study

No non-rated lines were identified.

3 overloaded lines were detected:

From Bus	To Bus	ID	Sens.	Percent Overload
HURLEY S 230	PROCTER 230	1	0.1600	20.0% Overload
ELVERTAS 230	NATOMAS 230	1	0.1250	28.5% Overload
CORTINA 230	REL CLUS 230	1	-0.0150	-0.5% Overload

2 forward schedule normal limits were detected:

From Bus	To Bus	ID	Sens.	Schedule MW Limit
HEDGE 230	PROCTER 230	1	-0.1650	474
ELVERTAS 115	NORTHCTY 115	1	0.0400	607

13 forward schedule outage limits were found:

Limiting Element			Outage					
From Bus	To Bus	ID	From Bus	To Bus	ID	Sens.	MW Limit	
ELVERTAW 230	OBANION 230	1	ELVERTAW 230	OBANION 230	2	0.1242	-46.8%	Overload
ELVERTAW 230	OBANION 230	2	ELVERTAW 230	OBANION 230	1	0.1242	-46.8%	Overload
HURLEY 115	HURLEY S 230	1	HEDGE 230	PROCTER 230	1	-0.0340	-22.2%	Overload
HURLEY 115	HURLEY S 230	1	HURLEY S 230	PROCTER 230	1	-0.0332	-7.9%	Overload
HURLEY 115	HURLEY S 230	1	ELVERTAS 115	NORTHCTY 115	1	-0.0220	-4.4%	Overload
WARNERVL 230	WRNRVLLE 115	1	WARNERVL 230	WRNRVLLE 115	2	0.0100	18.5%	Overload
WARNERVL 230	WRNRVLLE 115	1	WARNERVL 230	WRNRVLLE 115	3	0.0100	18.5%	Overload

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   WARNERVL 230 WRNRVLLE 115  1  STOREY 2 230 WARNERVL 230  1  0.0174
0.7% Overload
   WARNERVL 230 WRNRVLLE 115  1  TESLA E  230 WESTLEY  230  1  0.0118     613
   WARNERVL 230 WRNRVLLE 115  1  BELLOTA  230 WEBER    230  1  0.0135     711

   ELVERTAS 115 NORTHCTY 115  1  HEDGE    230 PROCTER  230  1  0.0595
7.0% Overload
   ELVERTAS 115 NORTHCTY 115  1  HURLEY   115 HURLEY S 230  1  0.0420
5.5% Overload
   ELVERTAS 115 NORTHCTY 115  1  HURLEY S 230 PROCTER  230  1  0.0587     117
   ELVERTAS 115 NORTHCTY 115  1  ELVERTAS 230 NATOMAS  230  1  0.0475     546

   NORTHCTY 115 STA. B   115  1  HEDGE    230 PROCTER  230  1  0.0313     135
   NORTHCTY 115 STA. B   115  1  HURLEY S 230 PROCTER  230  1  0.0307     673
   NORTHCTY 115 STA. B   115  1  NORTHCTY 115 STA. B   115  2  0.0266     818

   NORTHCTY 115 STA. B   115  2  HEDGE    230 PROCTER  230  1  0.0313     135
   NORTHCTY 115 STA. B   115  2  HURLEY S 230 PROCTER  230  1  0.0307     673
   NORTHCTY 115 STA. B   115  2  NORTHCTY 115 STA. B   115  1  0.0266     818

   LAKE     230 POCKET   230  1  HEDGE    230 PROCTER  230  1  0.1356     275
   LAKE     230 POCKET   230  1  HURLEY S 230 PROCTER  230  1  0.1343     610

   HEDGE    230 PROCTER  230  1  HEDGE    230 WHITEROK 230  1 -0.1877     311
   HEDGE    230 PROCTER  230  1  LAKE     230 POCKET   230  1 -0.2122     405

   HEDGE    230 WHITEROK 230  1  HEDGE    230 PROCTER  230  1 -0.0751     415
   HEDGE    230 WHITEROK 230  1  HURLEY S 230 PROCTER  230  1 -0.0744     807

   ELVERTAW 230 FIDDYMNT 230  1  ELVERTAS 230 ELVERTAW 230  1  0.0229     651

   ELVERTAS 230 ELVERTAW 230  1  ELVERTAW 230 FIDDYMNT 230  1 -0.1983     883
   ELVERTAS 230 ELVERTAW 230  1  HURLEY   115 HURLEY S 230  1 -0.2011     995

   CARMICAL 230 ORANGEVL 230  1  ELVERTAS 230 NATOMAS  230  1 -0.1726     914
```

Base Case Title:

Sensitivity Study, Add 1000 MW Cosumnes to Roseville Study
2005 Area 5 Summer Peak System Case
Added Enron's REF connected to Elverta & Roseville sub.

Transfer Schedule Case Title:

Sensitivity Study, Add 1000 MW Cosumnes to Roseville Study
2005 Area 5 Summer Peak System Case
Added Enron's REF connected to Elverta & Roseville sub.
Increased Cosumnes Generation 20 MW for TransferLimit Sensitivity Study

No non-rated lines were identified.

5 overloaded lines were detected:

From Bus	To Bus	ID	Sens.	Percent Overload	
WARNERVL 230	WRNRVLLE 115	1	0.0200	2.6%	Overload
ELVERTAS 230	NATOMAS 230	1	-0.0200	20.2%	Overload
CORTINA 230	REL CLUS 230	1	-0.0100	-3.8%	Overload
WARNERVL 230	WRNRVLLE 115	2	0.0050	2.7%	Overload
WARNERVL 230	WRNRVLLE 115	3	0.0050	2.7%	Overload

4 forward schedule normal limits were detected:

From Bus	To Bus	ID	Sens.	Schedule MW Limit
BELLOTA 230	COTTLE B 230	1	0.1150	17
COTTLE B 230	WARNERVL 230	1	0.1100	163
BELLOTA 230	RNCHSECO 230	1	-0.2850	824
BELLOTA 230	RNCHSECO 230	2	-0.2850	824

5 forward schedule outage limits were found:

Limiting Element			Outage					
From Bus	To Bus	ID	From Bus	To Bus	ID	Sens.	MW Schedule Limit	
ELVERTAW 230	OBANION 230	1	ELVERTAW 230	OBANION 230	2	0.0709	-24.6%	Overload
ELVERTAW 230	OBANION 230	2	ELVERTAW 230	OBANION 230	1	0.0709	-24.6%	Overload
BELLOTA 230	RNCHSECO 230	1	BELLOTA 230	RNCHSECO 230	2	-0.4627	365	
BELLOTA 230	RNCHSECO 230	2	BELLOTA 230	RNCHSECO 230	1	-0.4627	365	
STOREY 2 230	WARNERVL 230	1	BELLOTA 230	COTTLE A 230	1	-0.0959	1095	

Base Case Title:

2005 SPRING PEAK PG&E CASE
PATH 15=1418MW (N-S) PATH26=2997MW (N-S) PATH65=2522MW (N-S) COI=1734MW (N-S)
Added REF @ 900MW output

Transfer Schedule Case Title:

2005 SPRING PEAK PG&E CASE
PATH 15=1418MW (N-S) PATH26=2997MW (N-S) PATH65=2522MW (N-S) COI=1734MW (N-S)
Added REF @ 900MW output
Increased REF Generation 20 MW for TransferLimit Sensitivity Study

No non-rated lines were identified.

2 overloaded lines were detected:

From Bus	To Bus	ID	Sens.	Percent Overload
HEDGE 230	PROCTER 230	1	-0.1500	-21.5% Overload
HURLEY S 230	PROCTER 230	1	0.1450	8.3% Overload

1 forward schedule normal limit was detected:

From Bus	To Bus	ID	Sens.	Schedule MW Limit
ELVERTAS 115	NORTHCTY 115	1	0.0450	964

4 forward schedule outage limits were found:

Limiting Element				Outage					
From Bus	To Bus	ID		From Bus	To Bus	ID	Sens.	MW Schedule Limit
ELVERTAS 115	NORTHCTY 115	1		HEDGE 230	PROCTER 230	1	0.0627	403
ELVERTAS 115	NORTHCTY 115	1		HURLEY S 230	PROCTER 230	1	0.0621	483
ELVERTAS 115	NORTHCTY 115	1		HURLEY 115	HURLEY S 230	1	0.0490	702
LAKE 230	POCKET 230	1		HEDGE 230	PROCTER 230	1	0.1364	443
LAKE 230	POCKET 230	1		HURLEY S 230	PROCTER 230	1	0.1351	529
NORTHCTY 115	STA. B 115	1		HEDGE 230	PROCTER 230	1	0.0348	588
NORTHCTY 115	STA. B 115	1		NORTHCTY 115	STA. B 115	2	0.0356	644
NORTHCTY 115	STA. B 115	1		HURLEY S 230	PROCTER 230	1	0.0344	710
NORTHCTY 115	STA. B 115	2		HEDGE 230	PROCTER 230	1	0.0348	588
NORTHCTY 115	STA. B 115	2		NORTHCTY 115	STA. B 115	1	0.0356	644
NORTHCTY 115	STA. B 115	2		HURLEY S 230	PROCTER 230	1	0.0344	710

Base Case Title:

2005 SPRING PEAK PG&E CASE, Add 1000 Cosumnes Power Plant
PATH 15=1418MW (N-S) PATH26=2997MW (N-S) PATH65=2522MW (N-S) COI=1734MW (N-S)
Added REF @ 900MW output

Transfer Schedule Case Title:

2005 SPRING PEAK PG&E CASE, Add 1000 Cosumnes Power Plant
PATH 15=1418MW (N-S) PATH26=2997MW (N-S) PATH65=2522MW (N-S) COI=1734MW (N-S)
Added REF @ 900MW output
Add Cosumnes 20 MW Generation for TransferLimit Sensistiviy Study

No non-rated lines were identified.

No oveloaded lines were identified.

2 forward schedule normal limits were detected:

From Bus	To Bus	ID	Sens.	Schedule MW Limit
BELLOTA 230	RNCHSECO 230	1	-0.2850	287
BELLOTA 230	RNCHSECO 230	2	-0.2850	287

4 forward schedule outage limits were found:

Limiting Element			Outage				
From Bus	To Bus	ID	From Bus	To Bus	ID	Sens.	Schedule MW Limit
BELLOTA 230	RNCHSECO 230	1	BELLOTA 230	RNCHSECO 230	2	-0.4624	- 13.3% Overload
BELLOTA 230	RNCHSECO 230	2	BELLOTA 230	RNCHSECO 230	1	-0.4624	- 13.3% Overload
BELLOTA 230	COTTLE B 230	1	BELLOTA 230	WEBER 230	1	0.1286	881
BELLOTA 230	COTTLE B 230	1	BELLOTA 230	TESLA E 230	1	0.1292	948
BELLOTA 230	COTTLE B 230	1	TESLA E 230	WEBER 230	1	0.1287	998
COTTLE B 230	WARNERVL 230	1	BELLOTA 230	WEBER 230	1	0.1283	920
COTTLE B 230	WARNERVL 230	1	BELLOTA 230	TESLA E 230	1	0.1289	986

Base case data listing for:

Sensitivity Study, Add 1000 MW Cosumnes to Roseville Study
2005 Area 5 Summer Peak System Case
Added Enron's REF connected to Elverta & Roseville sub.

From Bus	To Bus	ID	MW Flow	Rated Amp Norm	Rated Amp Emer	Outage Flag	
ARBUCKLE 60	CORTINA 60	1	-22	438	512	outage	PG AND E
ATLANTC 230	GOLDHILL 230	1	87	826	977	outage	PG AND E
ATLANTC 230	RIO OSO 230	1	-217	826	977	outage	PG AND E
BAHIA 230	VACA-DIX 230	1	-189	906	1053	outage	PG AND E
BELLOTA 230	BRIGHTON 230	1	-25	751	864	outage	PG AND E
BELLOTA 230	COTTLE A 230	1	116	742	850	outage	PG AND E
BELLOTA 230	COTTLE B 230	1	255	636	745	outage	PG AND E
BELLOTA 230	LOCKFORD 230	1	64	752	864	outage	PG AND E
BELLOTA 230	RNCHSECO 230	1	-260	1240	1481	outage	PG AND E
BELLOTA 230	RNCHSECO 230	2	-260	1240	1481	outage	PG AND E
BELLOTA 230	TESLA E 230	1	71	1715	1715	outage	PG AND E
BELLOTA 230	WEBER 230	1	186	1715	1715	outage	PG AND E
BRIGHTON 230	RIO OSO 230	1	-156	752	864	outage	PG AND E
CACHE J1 115	CORTINA 115	1	-52	492	562	outage	PG AND E
CAMINO S 230	LAKE 230	1	188	760	880	outage	PG AND E
CAMINO S 230	UNIONVLY 230	1	-126	770	900	outage	PG AND E
CAMINO S 230	WHITEROK 230	1	53	770	900	outage	PG AND E
CAMPBELL 230	HEDGE 230	1	63	1200	1380	outage	PG AND E
CAMPBELL 230	POCKET 230	1	57	1200	1380	outage	PG AND E
CARMICAL 230	HURLEY S 230	1	13	760	880	outage	PG AND E
CARMICAL 230	ORANGEVL 230	1	-192	1037	1157	outage	PG AND E
CORTINA 60	HUSTD 60	1	5	279	327	outage	PG AND E
CORTINA 60	WADHMJCT 60	1	5	279	327	outage	PG AND E
CORTINA 60	WILL JCT 60	1	13	279	327	outage	PG AND E
CORTINA 115	INDIN VL 115	1	65	492	562	outage	PG AND E
CORTINA 230	REL CLUS 230	1	-357	838	964	outage	PG AND E
CORTINA 230	VACA-DIX 230	1	186	838	964	outage	PG AND E
COTTLE B 230	WARNERVL 230	1	234	636	745	outage	PG AND E
COTWD_E 230	LOGAN CR 230	1	98	781	964	outage	PG AND E
COTWD_E 230	ROUND MT 230	1	-85	752	864	outage	PG AND E
COTWD_E 230	ROUND MT 230	2	-83	635	746	outage	PG AND E
COTWDWAP 230	ROSEVILL 230	1	0	800	800	outage	PG AND E
EAST CTY 115	HEDGE 115	1	-82	760	880	outage	PG AND E
EAST CTY 115	HURLEY 115	1	-24	760	880	outage	PG AND E
EAST CTY 115	MID CTY 115	1	26	760	880	outage	PG AND E
EAST CTY 115	MID CTY 115	2	26	760	880	outage	PG AND E
EIGHT MI 230	GOLDHILL 230	1	-87	826	977	outage	PG AND E
EIGHT MI 230	TESLA E 230	1	-37	826	977	outage	PG AND E
ELKGROVE 230	HEDGE 230	1	-73	1520	1761	outage	PG AND E
ELKGROVE 230	RNCHSECO 230	1	-222	1520	1761	outage	PG AND E
ELVERTAS 115	NORTHCTY 115	1	107	760	880	outage	PG AND E
ELVERTAS 230	ELVERTAW 230	1	-892	3000	3000	outage	PG AND E
ELVERTAS 230	FOOTHILL 230	1	136	760	880	outage	PG AND E
ELVERTAS 230	HURLEY S 230	3	0	760	879	outage	PG AND E
ELVERTAS 230	NATOMAS 230	1	363	760	880	outage	PG AND E
ELVERTAS 230	ORANGEVL 230	1	109	760	880	outage	PG AND E
ELVERTAW 230	FIDDYMNT 230	1	156	800	800	outage	PG AND E

ELVERTAW	230	OBANION	230	1	-296	1054	1054	outage	PG AND E
ELVERTAW	230	OBANION	230	2	-296	1054	1054	outage	PG AND E
ELVERTAW	230	ROSEVILL	230	1	14	800	800	outage	PG AND E
FIDDYMNT	230	ROSEVILL	230	1	-0	800	800	outage	PG AND E
FOOTHILL	230	ORANGEVL	230	1	27	760	880	outage	PG AND E
GOLDHILL	230	LAKE	230	1	-76	760	880	outage	PG AND E
GOLDHILL	230	LODI	230	1	87	826	977	outage	PG AND E
GOLDHILL	230	RIO OSO	230	1	-168	826	977	outage	PG AND E
HEDGE	115	HEDGE	230	2	-46	120	120	outage	PG AND E
HEDGE	115	HEDGE	230	4	-59	150	150	outage	PG AND E
HEDGE	115	HEDGE	230	6	-81	200	200	outage	PG AND E
HEDGE	115	SOUTHCTY	115	1	52	500	580	outage	PG AND E
HEDGE	115	SOUTHCTY	115	2	52	500	580	outage	PG AND E
HEDGE	230	PROCTER	230	1	-271	1516	1757	outage	PG AND E
HEDGE	230	RNCHSECO	230	1	-103	1520	1761	outage	PG AND E
HEDGE	230	WHITEROK	230	1	-186	760	880	outage	PG AND E
HURLEY	115	HURLEY S	230	1	-129	200	200	outage	PG AND E
HURLEY	115	NORTHCTY	115	1	53	760	880	outage	PG AND E
HURLEY	115	NORTHCTY	115	2	53	760	880	outage	PG AND E
HURLEY S	230	PROCTER	230	1	116	760	880	outage	PG AND E
INTAKE	230	WARNERVL	230	1	119	838	965	outage	PG AND E
INTAKE	230	WARNERVL	230	2	119	838	965	outage	PG AND E
JAYBIRD	230	UNIONVLY	230	1	-9	700	820	outage	PG AND E
JAYBIRD	230	WHITEROK	230	1	124	700	820	outage	PG AND E
LAKE	230	ORANGEVL	230	1	0	760	880	outage	PG AND E
LAKE	230	POCKET	230	1	68	760	880	outage	PG AND E
LOCKFORD	230	RIO OSO	230	1	-91	752	864	outage	PG AND E
MID CTY	115	STA. B	115	1	-9	760	880	outage	PG AND E
NORTHCTY	115	STA. A	115	1	40	350	350	outage	PG AND E
NORTHCTY	115	STA. A	115	2	40	350	350	outage	PG AND E
NORTHCTY	115	STA. B	115	1	27	485	485	outage	PG AND E
NORTHCTY	115	STA. B	115	2	27	485	485	outage	PG AND E
ORANGEVL	230	WHITEROK	230	1	-0	760	880	outage	PG AND E
PALERMO	230	TBL MT D	230	1	-104	826	977	outage	PG AND E
PARKWAY	230	VACA-DIX	230	1	-168	906	1053	outage	PG AND E
POCKET	230	RNCHSECO	230	1	-75	1520	1761	outage	PG AND E
POCKET	230	RNCHSECO	230	2	-75	1520	1761	outage	PG AND E
SOUTHCTY	115	STA. B	115	1	37	760	880	outage	PG AND E
STA. A	115	STA. D	115	1	15	600	600	outage	PG AND E
STA. B	115	STA. D	115	1	33	600	600	outage	PG AND E
STAGG	230	TESLA E	230	1	-97	826	977	outage	PG AND E
STOREY 2	230	WARNERVL	230	1	-163	636	745	outage	PG AND E
TESLA D	230	TESLA E	230	1	268	2001	2001	outage	PG AND E
TESLA E	230	WEBER	230	1	-1	1715	1715	outage	PG AND E
TESLA E	230	WESTLEY	230	1	177	1504	1727	outage	PG AND E
WARNERVL	230	WRNRVLLE	115	1	154	150	150	outage	PG AND E
WARNERVL	230	WRNRVLLE	115	2	77	75	75	outage	PG AND E
WARNERVL	230	WRNRVLLE	115	3	77	75	75	outage	PG AND E

Appendix C

Power Flow Diagrams

Technical Area: Visual Resources and Plumes
CEC Authors: Michael Clayton and William Walters
CPP Author: Wendy Haydon

BACKGROUND

Staff will need to make use of the Applicant's figures presented in the AFC and supplemental filings.

DATA REQUEST

87. Please provide three sets of electronic files on CDs of the following figures or their revisions: 1.1-2, 1.1-3, 1.1-4, 1.1-5, 2.2-2, 2.2-3, and all figures contained in the Visual Resources Section of the AFC.

    Response: To facilitate efficiency, constructability, and plant design, some of the major equipment has been rearranged. A new site plan was recently received and a new visual simulations of KOP 1 and 2 are being to assess visual impacts. The visual simulations will be included in an AFC Supplement that will be prepared to address this change. The Supplement should be submitted in February 2002. Once the simulations have been completed, the above-referenced figures will be placed on a CD-ROM and 3 copies will be provided to staff.

88. Please provide three sets of electronic files on CDs of the revisions to existing figures and new figures as requested in the following Data Requests.

    Response: See Data Response #87.

BACKGROUND

Four key observation points (KOPs) were established in order to evaluate both the visual setting and the potential for project-induced visual impacts. Photographs were obtained at each KOP and presented along with visual simulations of the proposed project. In order to accurately represent the views that would be experienced at each KOP, staff considers 18 inches to be an appropriate reading/viewing distance for all KOP images. However, the images presented (setting photographs as well as simulations) are presented at less than life-size scale when viewed at the 18-inch reading/viewing distance. Although reading/viewing distances of 12 and 13 inches are specified for the images presented in the AFC, the images are still approximately 10 to 15 percent undersized based on field verification. The presentation of images at a reduced scale understates the prominence of visible landscape features as well as potential visual impacts.

DATA REQUEST

95. Please re-scale the setting and simulation images for KOPs 1 and 2 to achieve life-size scale when viewed at a standard reading/viewing distance of 18 inches. If re-scaling results in substantial degradation of the image, please provide new high resolution setting and simulation images at life-size scale. After obtaining appropriately scaled images, please provide five photocopies of high quality 11"x17" color images of the existing views and simulations.

Response: See Data Response #87.

BACKGROUND

Figure 8.11-2b provides a simulation of the proposed project as viewed from KOP 1. However the simulation shows the previously proposed H-frame transmission structures and not the currently proposed tubular style.

DATA REQUEST

96. Please revise Figures 8.11-2b (KOP 1) and 8.11-3b (KOP 2) to show the currently proposed tubular transmission towers.

Response: See Data Response #87.

BACKGROUND

AFC Section 8.11.5.3.3, pp. 8.11-12,13, states that the plume frequency of the project would be minimal. However, no further information is given to substantiate that claim. Staff requires cooling tower and HRSG operating data to model the plume frequency and plume dimensions to determine the potential significance of the project's visible water vapor plumes.

DATA REQUEST

107. Please complete the following table of operating parameters for the cooling tower:

Table 1

Parameter	Value
Maximum Design Inlet Air Flow Rate (kg/s)	14,400
Maximum Heat Rejection Rate (MW)	671.2
Design Liquid to Gas (L/G) Mass Ratio	1.10

Response: The numbers in the table have been revised to reflect having both cooling towers in operation.

108. Please provide, at a minimum, the operating exhaust temperatures and exhaust flows from the cooling tower that correspond to the following ambient conditions *(a similar set of ambient conditions may be substituted for the values specified as long as they represent the range of ambient conditions expected at the site).* The values presented should correspond to maximum anticipated heat rejection at the specified ambient conditions.

Table 2

Ambient Condition	Exhaust Flow Rate (lbs/hr/cell)	Exhaust Temperature (°F)
Full Turbine Load		
20°F, 90% RH		
20°F, 60% RH		
20°F, 30% RH		
50°F, 90% RH		
50°F, 60% RH		
50°F, 30% RH		
80°F, 90% RH		
80°F, 60% RH		
80°F, 30% RH		

Response: At the CEC's January 23, 2002 workshop, the Applicant was asked to confirmation of the values in Table VR-108 submitted in Data Response, Set 1A. The data previously submitted for cooling tower performance is correct for 8 cells operating in each 9-cell cooling tower.

110. Please identify the minimum ambient temperature where inlet air fogging will be used.

Response: As clarification to the information provided in Data Response, Set 1A, the gas turbines are expected to normally use the inlet evaporative coolers (or inlet fogging) for ambient dry bulb temperatures above 59 °F.

Technical Area: Water and Soil Resources
CEC Authors: Philip Lowe, P.E., Greg Peterson, P.E., & Richard Latteri
CPP Author: EJ Koford

BACKGROUND

Construction of the CPP may induce water and wind erosion at the power plant site. Surface water runoff is to be directed around the construction site to minimize erosion and pollutant loading. A Storm Water Pollution Prevention Plan (SWPPP) will be required for construction. The AFC (Pages 8.14.15 and 8.14.16) states that approximately 50 acres of land will be graded, plus approximately 20 acres of land used as a laydown area. The laydown area is described as including ephemeral streams that would have to be crossed in some manner. It is stated that a SWPPP will be provided to the County and will describe mitigation measures to avoid or minimize erosion and sedimentation to a level less than significant. Typical Best Management Practices (BMPs) are described in the AFC, particularly in Section 8.9.5, but few are specific to the CPP site.

DATA REQUEST

118. Please provide a draft Storm Water Pollution Prevention Plan (SWPPP) consistent with the requirements for a General Storm Water Construction Activity Permit that identifies measures that will be implemented to control wind and water erosion related to CPP construction for all ancillary and or linear facilities. The plan shall describe all temporary and permanent construction BMPs, calculations and assumptions used in determining drainage or containment structure sizes, capacity and appropriate BMPs, and show conceptual design and locations proposed for these BMPs. Also, include in this draft plan a potential contaminate spills prevention and countermeasure plan.

    Response: To facilitate efficiency, constructability, and plant design, some of the major equipment has been rearranged. A new site plan was recently received and a revised grading plan will be prepared. We have included a Draft SWPPP as Attachment W&SR-118. However, it will be revised once the new grading plan is received.

119. Please provide a draft erosion control plan for plant operation to include practices and conceptual designs with appropriate back-up calculations for avoiding or minimizing CPP-induced or exacerbated wind and water erosion on bare areas of the CPP site, in the diverted stream channels, and at locations of flow concentration for plant drainage.

    Response: The draft Erosion Control Plan is part of the Draft SWPPP (see Attachment W&SR-118).

BACKGROUND

Section 8.14.5.1 of the AFC states that stormwater that falls within the developed CPP site during construction and operation may potentially dissolve oils, grease, and other contaminants and carry them along with entrained sediments into Clay Creek. A Notice of Intent (NOI) is required to demonstrate compliance with the General Permit for Discharges of Storm Water Associated With Industrial Activities. The NOI will include a SWPPP that describes BMPs that will be used to reduce industrial stormwater contamination. Section 8.14.5.1 of the AFC describes the detention basin as a BMP, but there is no single description of all BMPs that would be included in the NOI. Since there is a potential for stormwater contamination, staff needs a description of: potential sources of contamination; receiving waters; management practices intended to prevent or minimize contamination; and probable effect of BMPs on reducing contamination that are outside the NPDES process.

DATA REQUEST

121. Please provide a preliminary SWPPP consistent with the requirements of the General Permit for Discharges of Storm Water Associated With Industrial Activities that includes:
    a) a site map,
    b) a list of significant materials handled and stored at the site,
    c) a description and assessment of potential pollutant sources,
    d) a description of proposed storm water BMPs intended for use at the site, and
    e) a description of proposed BMP goals and monitoring protocol for achieving intended goals.

    Response: See Data Response #118.

122. Stormwater mitigative measures shall be addressed in the SWPPP and should include;
    a) storm drain inlet protection to prevent sedimentation-laden runoff from disturbed soil,
    b) silt fence or straw bail barriers at less than 250 foot spacing,
    c) secondary containment for hazardous materials,
    d) designated storage areas for construction wastes,
    e) a spill prevention and control plan,
    f) storage of all liquid wastes in covered containers,
    g) emergency spill containment kits,
    h) routine maintenance of oil/water separator system,
    i) use of geotextiles and mats to stabilize slopes,
    j) soils stabilizers to minimize dust, and

k) temporary and permanent vegetation strategies.

Additional measures may be needed to meet special Inland Surface Waters Plan requirements.

Response: See Data Response #118.

BACKGROUND

Section 8.14.5.1 of the AFC describes a detention basin intended to maintain post-development discharges from the CPP at pre-development levels. According to the Data Adequacy Supplement dated November 13, 2001, the detention basin would be designed for a volume equal to the difference between the pre-development and post-development 10-year, 24-hour flood volumes, or 100,000 cubic yards of water. It is presumed that this is an error, and that the actual design volume is 100,000 cubic feet, which would be consistent with the difference in ten-year flow volume between AFC tables 8.14-6 and 8.14-7. According to the AFC Supplement, the detention basin design, which would include an oil/sediment separator, would be consistent with Bay Area Stormwater Management Agencies Association (BASMAA) recommended BMPs for extended detention ponds.

The volume required for an on-line detention basin such as this one is not necessarily the same as the difference in total flood volume. The AFC Supplement states the detention basin would drain in 24 hours but does not give the design discharge from the detention basin nor is the pre-development peak discharge rate given. The detention basin would include a spillway in case of overflow, but the location and design of this spillway is not given. Based on Figure 8.14-4R, it appears the detention basin would be contained by an earthen embankment. Overflow of the earthen embankment, unless protection is provided in an armored spillway, could result in sudden failure of the embankment and release of all detained waters at once.

DATA REQUEST

136. Please provide a conceptual design of the detention basin embankment and spillway including overflow analysis using the proposed hydraulic characteristics of the spillway and the hydrologic and reservoir routing techniques described in Data Requests #133 and #134 above for at least the 25-year, 50-year and 100-year flood hydrographs (include discharges greater than the 100-year if the spillway design discharge is greater). Describe what will be the spillway design discharge, include a rationale for selecting that discharge and include an assessment of the risk and potential consequences of spillway or embankment failure resulting from discharges exceeding the spillway design discharge. Include a conceptual spillway armoring design and a scour analysis to demonstrate the adequacy of the proposed armoring to protect against undermining through plunging flows on the downstream side of the spillway.

Response: As discussed in workshops with CEC staff, the Applicant will attempt to move this item up in the design queue.

138. Please show all proposed and existing contours on grading plans. Show all pipeline, drainage features and laydown areas. Please provide a figure that distinguishes areas that will be routed to: the blow-down treatment systems, the stormwater detention pond, and other remaining areas.

Response: As discussed in workshops with CEC staff, the Applicant will attempt to move this item up in the design queue.

BACKGROUND

No mass & heat balances were provided in the AFC, thus it is uncertain whether the applicant proposes to use supplemental duct firing, which increases water consumption.

DATA REQUESTS

150. Please provide heat and material balances for average and 99% conditions according to the American Society of Heating Refrigeration, and Air Conditioning Engineers (ASHRAE) standards. Please describe the peak make-up water rate with and without supplemental firing with emphasis on annual water use, maximum month, and instantaneous peak day.

Response: For the heat and mass balance provided in Data Response, Set 1A, the cooling tower circulating water flow is 126,028 gpm (7,940 kg/s) for each cooling tower and the heat load for each tower is 313.0 MW.

BACKGROUND

Page 27 of the CPP Data Adequacy Response states that SMUD has a contract for 75,000 AFY of USBR water from the Folsom South Canal. During operation, the Rancho Seco Plant used approximately 28,000 AFY. Since closure, the plant has used approximately 15,000 AFY; and as with all USBR customers, water that is not used by SMUD is made available for other Central Valley Project (CVP) uses. Currently, the CVP dedicates 800,000 AFY year to fish and wildlife and 410,000 AF to State and wildlife refuges and wetlands pursuant to the Central Valley Project Improvement Act (CVPIA).

Per CVP policy, SMUD's unused RSP water has been made available for other CVP uses. With the proposed CPP using approximately 8,000 AFY with peak annual demands as high as 9,000 AFY, it is possible that this renewed use of American River water will decrease water currently used to meet Delta water quality standards or other fish and wildlife uses.

APPLICANT'S CLARIFICATION TO BACKGROUND STATEMENT

This Background section of the Data Requests incorrectly characterizes the effect of SMUD's use of water for the CPP on the CVP. It is true that "water that is not used by SMUD is made available for other Central Valley Project (CVP) uses." However, as a practical matter, water not used by SMUD is made available only for irrigation uses. While USBR has obligations to make water available for fish and wildlife and refuge and wetland uses, these obligations are co-extensive with USBR's obligation to make water available to SMUD. As such, the amount of water made available for these uses is determined by the hydrology of the water year, and not by SMUD's usage of water under its contract. In other words, these uses receive water whether or not SMUD takes its water. The only effect (from SMUD taking its water) is on irrigation uses, and as noted below in the response to the data requests, the effect is so small as to be literally immeasurable.

DATA REQUESTS

151. In tabular form, please provide historical annual consumption by month and yearly total of USBR/CVP water used for RSP operation from date of commercial operation until the year 2000.

Response: The USBR was queried based upon contact information provided to the applicant by the CEC. Information by month and year for 1981 through 2001 was given to the applicant and is provided in Table W&SR-151. During some years, the totals are different than information previously supplied by the Applicant in Data Response, Set 1A. The information supplied in Set 1A is from payment records to the USBR. Payments based upon the Applicant's data have not been disputed by the USBR, therefore the applicant feels the previously submitted information accurately represents its withdrawals from Folsom-South Canal. This information is provided for CVP supplies and assumes that the water supply quantities reported by the USBR is entirely CVP supply.

W&SR-151: Monthly Water Deliveries from USBR to FSC for SMUD: 1981-2001
Delivery Water Quantities

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	Total
January 3A		**794**	**439**	**878**	**1026**	**120**	**693**	**537**	**1080**	**721**	**1242**	**1132**	**650**	**930**	**1054**	**1147**	**424**	**963**	**1240**	**1153**	**1240**	**17463**
January 3B1		519	310	603	562	27	434	207	1081	493	0	73	73	128	121	220	0	25	576	0	18	5470
February 3A		**691**	**619**	**953**	**1133**	**268**	**358**	**410**	**1005**	**622**	**426**	**842**	**723**	**781**	**1120**	**996**	**996**	**212**	**631**	**942**	**1028**	**14756**
February 3B1		320	389	686	593		153	142	678	372	997	80	58	102	167	237	237	0	0	0	0	5211
March 3A		**561**	**36**	**830**	**856**	**500**	**345**	**787**	**902**	**1047**	**743**	**1343**	**1119**	**1078**	**987**	**1071**	**963**	**963**	**1144**	**1228**	**1132**	**17635**
March 3B1		166	0	536		0	154	380	918	589	86	261	202	86	111	238	25	25	0	0	0	3777
April 3A		**80**	**160**	**577**	**420**	**401**	**489**	**542**	**1400**	**994**	**1018**	**985**	**1163**	**1098**	**1187**	**1112**	**1112**	**814**	**1019**	**1222**	**1147**	**16940**
April 3B1		44	81	569		258	129	300	1010	440	310	337	140	104	215	271	271	0	0	0	0	4479
May 3A		**416**	**383**	**1218**	**513**	**668**	**699**	**804**	**1120**	**910**	**1346**	**1240**	**992**	**1017**	**1200**	**1200**	**1200**	**874**	**1099**	**1240**	**1240**	**19379**
May 3B1		71	187	1064		283	223	523	1081	541	601	598	161	219	153	373	373	0	0	35	78	6564
June 3A		**265**	**348**	**1200**	**662**	**421**	**549**	**1250**	**1041**	**1067**	**1010**	**1148**	**1162**	**1039**	**1120**	**1005**	**1005**	**1005**	**1161**	**1240**	**1240**	**18938**
June 3B1		55	0	1446		359	192	769	1171	740	351	268	105	298	0	84	84	84	0	118	12	6136
July 3A		**422**	**519**	**998**	**526**	**695**	**653**	**1056**	**615**	**967**	**1220**	**1185**	**1190**	**1203**	**1240**	**1023**	**1023**	**0**	**1240**	**1232**	**1240**	**18247**
July 3B1		69	92	409		403	267	696	478	0	453	249	161	59	341	88	88	0	118	0	77	4048
August 3A		**857**	**1010**	**1183**	**535**	**258**	**585**	**934**	**899**	**1189**	**1240**	**1232**	**1093**	**1212**	**1236**	**1240**	**1240**	**1240**	**1240**	**1240**	**1240**	**20903**
August 3B1		213	633	615		676	236	803	571	527	124	326	179	104	476	667	667	667	169	24	20	7697
September 3A	**5912**	**1090**	**857**	**784**	**394**	**628**	**603**	**1040**	**1012**	**983**	**1260**	**1184**	**1186**	**1146**	**1232**	**1096**	**1096**	**1096**	**1240**	**1234**	**1165**	**26238**
September 3B1	3185	482	599	391		243	247	1060	606	328	335	256	162	95	343	18	18	18	218	0	0	8604
October 3A	**767**	**1195**	**1035**	**760**	**372**	**678**	**954**	**170**	**938**	**1060**	**1121**	**1006**	**1196**	**1277**	**1240**	**1000**	**1000**	**1000**	**1240**	**1214**	**1202**	**20425**
October 3B1	232	695	738	555		318	136	365	571	281	366	178	157	167	423	31	31	31	206	0	0	5481
November 3A	**638**	**752**	**675**	**1023**	**867**	**484**	**335**	**1080**	**1078**	**1000**	**1603**	**742**	**1115**	**1161**	**1200**	**929**	**929**	**929**	**1161**	**1123**	**1129**	**19953**
November 3B1	182	400	389	917		206	163	1389	658	62	320	281	95	136	365	35	35	35	0	0	0	5668
December 3A	**751**	**176**	**645**	**1071**	**1028**	**130**	**574**	**1343**	**879**	**1020**	**1042**	**1151**	**991**	**1158**	**1168**	**848**	**0**	**0**	**1033**	**1186**		**16194**
December 3B1	460	14	271	606		87	247	1535	570	0	355	135	118	113	244	20	0	0	0	0		4775
Total 3A	**8068**	**7299**	**6726**	**11475**	**8332**	**5251**	**6837**	**9953**	**11969**	**11580**	**13271**	**13190**	**12580**	**13100**	**13984**	**12667**	**10988**	**9096**	**13448**	**14254**	**13003**	**227071**
Total 3B1	**4059**	**3048**	**3689**	**8397**	**1155**	**2860**	**2581**	**8169**	**9393**	**4373**	**4298**	**3042**	**1611**	**1611**	**2959**	**2282**	**1829**	**885**	**1287**	**177**	**205**	**67910**
Combined Total	**12127**	**10347**	**10415**	**19872**	**9487**	**8111**	**9418**	**18122**	**21362**	**15953**	**17569**	**16232**	**14191**	**14711**	**16943**	**14949**	**12817**	**9981**	**14735**	**14431**	**13208**	**294981**

Note: A blank cell indicates no data.

BACKGROUND

Table 2.2-1 shows the average and peak water demand as 8,000 and 12,431 AF/Y, respectively. Chapter 1 defines the maximum rate as 9,000 AF/Y, and Table 7.1-1 shows the 4 peak months to have a demand equivalent to 9,600 AF/Y.

Section 2.2.6 indicates that the maximum natural gas requirement is 170,000 MMBtuh (LHV basis) for each gas turbine, which is 100x the heat input of comparable combined cycle turbines. No other mass & heat balance information was provided to show the sink for this large heat input or to provide a basis to better understand water consumption during average and peak conditions.

DATA REQUESTS

153. Please explain the basis for the various water consumption rates and the hours/yr that each will apply. To what degree will onsite water storage volume be used to buffer peak water demands?

Response: The following is a clarifying statement to Data Response #153 provided in Set 1A on January 9th.

The summer water consumption rate was developed using climate data from McClellan AFB, Sacramento. Based on the data, the average daily summer month temperature was determined to be 79 °F dry bulb (DB) with a mean coincident wet bulb of 62 °F. The water consumption rate was determined for this condition. Water consumption for a 24-hour period, and for a month, was then calculated. A five percent contingency was added to this water usage rate to allow for the site to be a few degrees hotter on average than McClellan AFB and to encompass peak design conditions during an unusually hot summer. This results in a water consumption rate of about 800 acre-feet during each of the summer months.

The same approach was applied during the non-summer months using March as a typical month. For March the average daily temperature was determined to be 54 °F DB with a mean coincident wet bulb temperature of 48 °F. Water consumption over the 24-hour period at these conditions was determined and then used to establish the monthly consumption. Since it is expected that the scheduled maintenance will occur during these months and that the site may be a few degrees cooler than McClellan AFB, the expected consumption rate was lowered by a few percent to arrive at about 600 acre-feet per month water consumption.

This approach yields an estimate of 8,000 acre-feet annual water consumption. As a check to this approach, the values are equivalent to the annual consumption based on operating an entire year at the annual average

condition of 61 °F. To allow for unusually warm annual average temperatures extending beyond the summer months, a 10 percent contingency was added to the 8,000 acre-feet to arrive at 9,000 acre-feet annual usage as an expected maximum.

BACKGROUND

Section 7.2 indicates that potable water will pass through an ultra-filter before being stored in a 2,500-gallon bulk tank and then used to replenish a chlorinated 250 gallon pressure tank. A US Filter Water Boy® package plant is said to employ microfiltration and UV disinfection, but it is unclear how this package plant will interface with the ultrafiltration and chlorination system.

DATA REQUEST

156. Please provide a process flow diagram and description of how the Water Boy® package plant will interface with the UF and chlorination system. In the event of a power outage or potable water equipment failure please explain how sufficient pressurized water will be available to meet all plant safety showers and eyewash requirements in a worst-case scenario such as a chemical spill. Please verify that there will be sufficient chlorine contact time in light of the fact that a pressurized water tank's active volume is usually about half of its nominal volume.

Response: The schematic presented in Data Response, Set 1A, should read "Ultrafiltration Unit" and not "Ultra Fine Filter."

BACKGROUND

Table 8.14-3 estimates effluent quality at 10 cycles of concentration and shows that silica, iron, copper, lead, manganese, mercury, silver, selenium, zinc, and other constituents could exceed the estimated effluent discharge limits. Temperature, trihalomethanes, chlorine, and biocide toxicity are other discharge concerns.

Section 7.1.5 describes the blowdown treatment as a clarifier where some of the metals are removed, with a final gravity sand separator used to reduce turbidity to less than 1 NTU before discharge. In similar applications, achieving low metals and turbidity has required different unit processes.

DATA REQUESTS

157. Clarifiers are very efficient at removing sand and silt particles, but effluent turbidity is most often caused by fine colloidal particles that are not readily removed by gravitational forces such as employed in a sand separator. Please explain the additional turbidity reduction benefit provided by the final sand separator described in 7.1.5.

Response: There will be a sand separator downstream of the wastewater treatment clarifier. The clarifier supplier specified the location and requirement for the sand separator in order to guarantee a low level of turbidity. On occasion, the clarifier can become upset and the downstream filter ensures meeting NPDES requirements.

Attachment W&SR-118

Draft SWPP